RECORD OF DECISION

Operable Unit Two

Cornell-Dubilier Electronics, Inc. Superfund Site

South Plainfield, Middlesex County, New Jersey

United States Environmental Protection Agency

Region II

September 2004

DECLARATION STATEMENT

RECORD OF DECISION

SITE NAME AND LOCATION

Cornell-Dubilier Electronics, Inc. (EPA ID# NJD981557879)
Borough of South Plainfield, Middlesex County, New Jersey
Operable Unit 2

STATEMENT OF BASIS AND PURPOSE

This decision document presents the Selected Remedy to address Operable Unit 2, consisting of contaminated facility soils and buildings, at the Cornell-Dubilier Electronics, Inc. (CDE) Superfund Site, in South Plainfield, New Jersey, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act, as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the Administrative Record file for the Site.

The State of New Jersey concurs with the Selected Remedy.

ASSESSMENT OF THE SITE

The response action selected in this Record of Decision (ROD) is necessary to protect public health, welfare or the environment from actual or threatened releases of hazardous substances from the Site into the environment.

DESCRIPTION OF THE SELECTED REMEDY

The Selected Remedy described in this document addresses the remediation of contaminated soils and buildings at the former CDE facility. This is the second remedial phase, or operable unit, for the CDE Site, identified as Operable Unit 2 (OU2). A previous Record of Decision, signed in September 2003, selected a remedy to address contaminated soil and interior dust at properties in the vicinity of the former CDE facility. Additional remedial actions are planned to address the contaminated groundwater and the sediments of the Bound Brook. The major components of the Selected Remedy include:

Soils

- excavation of an estimated 107,000 cubic yards of contaminated soil containing polychlorinated biphenyls (PCBs) at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminants other than PCBs;

- on-site treatment of excavated soil amenable to treatment by low temperature thermal desorption (LTTD), followed by backfilling of excavated areas with treated soils;
- transportation of contaminated soil and debris not suitable for on-site LTTD treatment to an off-site facility for disposal, with treatment as necessary;
- excavation of an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas and transportation for disposal off site, with treatment as necessary;
- installation of a multi-layer cap or hardscape;
- installation of engineering controls;
- property restoration; and
- implementation of institutional controls.

Buildings

- demolition of the 18 on-site buildings;
- transportation of the building debris off-site for disposal, with treatment as necessary; and
- relocation of eligible tenants at the former CDE facility buildings pursuant to the Uniform Relocation Act, as necessary.

Contingency Remedy

Although certain buildings would have to be demolished as part of the selected soil remedy and an expected redevelopment of the industrial park anticipates demolition of all the existing structures, it is possible that not all of the structures will have to be demolished. Therefore, the Selected Remedy for the buildings includes a contingency remedy that would allow for the decontamination and surface encapsulation of certain buildings that may not need to be demolished. The contingency remedy would require institutional controls to be employed to ensure that any future Site activities are performed with knowledge of the Site conditions and with appropriate health and safety controls, and that the buildings would not be used for any purposes inconsistent with the continued presence of PCBs within the building materials.

The Selected Remedy will be the final remedy for soils and buildings at the former CDE facility.

DECLARATION OF STATUTORY DETERMINATIONS

Part 1: Statutory Requirements

The Selected Remedy is protective of human health and the environment, complies with federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The Selected Remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Part 2: Statutory Preference for Treatment

The Selected Remedy for soils will meet the statutory preference for the use of remedies that employ treatment that reduces toxicity, mobility or volume as a principal element.

Part 3: Five-Year Review Requirements

Because the Selected Remedy will result in hazardous substances remaining on the Site above health-based levels, a statutory five-year review will be conducted within five years after the initiation of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record for this Site.

- Chemicals of concern and their respective concentrations may be found in the "Site Characteristics" section.
- Baseline risk represented by the chemicals of concern may be found in the "Summary of Site Risks" section.
- A discussion of cleanup levels for chemicals of concern may be found in the "Remedial Action Objectives" section.
- A discussion of source materials constituting principal threats may be found in the "Principal Threat Waste" section.
- Current and reasonably-anticipated future land use assumptions are discussed in the "Current and Potential Future Site and Resource Uses" section.

- Potential land uses that will be available at OU2 as a result of the Selected Remedy are discussed in the "Remedial Action Objectives" section.

- Estimated capital, annual operation and maintenance (O&M), and total present worth costs are discussed in the "Description of Alternatives" section.

- Key factors that led to selecting the remedy (i.e., how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decisions) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

Kathleen Callahan

Jane M. Kenny
Regional Administrator
Region II

9/30/04
Date

DECISION SUMMARY

Operable Unit Two

Cornell-Dubilier Electronics, Inc. Site

South Plainfield, Middlesex County, New Jersey

United States Environmental ?rotection Agency

Region II

September 200'

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SITE NAME, LOCATION AND DESCRIPTION

The Cornell-Dubilier Electronics, Inc. (CDE) Site is located at 333 Hamilton Boulevard, South Plainfield, Middlesex County, New Jersey. The former CDE facility, now known as the Hamilton Industrial Park, consists of approximately 26 acres containing 18 buildings that are currently used by a variety of commercial and industrial tenants. The fenced 26-acre facility is bounded on the northeast by the Bound Brook and the former Lehigh Valley Railroad, Perth Amboy Branch (presently Conrail); on the southeast by the Bound Brook and a property used by the South Plainfield Department of Public Works; on the southwest, across Spicer Avenue, by single-family residential properties; and to the northwest, across Hamilton Boulevard, by mixed residential and commercial properties (see Appendix I, Figure 1).

Prior to 1936, Spicer Manufacturing Corp., a predecessor to Dana Corporation, owned and operated the facility, and many of the buildings date from this era. Spicer Manufacturing Corp. ceased operations in South Plainfield in 1929 and, beginning in 1936, leased the property to CDE. CDE operated at the facility from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. Polychlorinated biphenyls (PCBs) and chlorinated organic solvents were used in the manufacturing process, and the company apparently disposed of PCB-contaminated materials and other hazardous substances directly on the facility soils. CDE's activities evidently led to widespread chemical contamination at the facility, as well as migration of contaminants to areas nearby the facility. PCBs have been detected in the groundwater, soils and in building interiors at the industrial park, at adjacent residential, commercial, and municipal properties, and in the surface water and sediments of the Bound Brook. High levels of volatile organic compounds (VOCs) have been found in the facility soils and in groundwater. Since CDE's departure from the facility in 1962, it has been operated as a rental property, with over 100 commercial and industrial companies operating at the facility as tenants. Some of these tenants may have contributed to some Site contamination, but the PCB and VOC contamination appears to be primarily attributable to CDE's operation.

The CDE Site is on the U.S. Environmental Protection Agency's (EPA's) National Priorities List (NPL). EPA is the lead agency, and the New Jersey Department of Environmental Protection (NJDEP) is the support agency.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Operations and State and Federal Response Actions

In 1996, NJDEP conducted a Site Inspection and collected surface soil, surface water, and sediment samples at the facility property. In June 1996, at the request of NJDEP, EPA collected and analyzed additional soil, surface water and sediments at the facility. The results of the sample analyses revealed that elevated levels of PCBs, VOCs, and inorganics were present at the Site.

As a result of the contamination found at the facility, in March 1997, EPA ordered the owner of the facility property, D.S.C. of Newark Enterprises, Inc. (DSC), a potentially responsible party (PRP), to perform a removal action to mitigate risks associated with contaminated soil and surface water runoff from the facility. The removal action included paving driveways and parking areas in the industrial park, installing a security fence, and implementing drainage controls.

In 1997, EPA conducted a preliminary investigation of the Bound Brook to evaluate the potential impacts of contamination on human health and the environment. Elevated levels of PCBs were found in fish and sediments of the Bound Brook. As a result of these investigations, NJDEP issued a fish consumption advisory for the Bound Brook and its tributaries, including nearby New Market Pond and Spring Lake.

In 1997, EPA began collecting surface soil and interior dust samples from residential and commercial properties near the CDE facility. The results of the sampling revealed PCBs in soil and interior dust that posed a potential health concern for residents of several of the properties tested. These investigations led to removal actions at 15 residential properties, conducted from 1998 to 2000. In July 1998, EPA included the Site on the NPL.

EPA has divided the Site into separate phases, or operable units, for remediation purposes. Operable Unit 1 (OU1) consists of residential, commercial, and municipal properties located in the vicinity of the former CDE facility. Operable Unit 2 (OU2) addresses the contaminated soils and buildings at the former CDE facility, including soils that may act as a source of groundwater contamination. Additional operable units will address contaminated groundwater and the sediments of the Bound Brook.

In 2000, EPA initiated the Remedial Investigation (RI) for the Site and began collecting soil samples from properties further from the CDE facility. This sampling revealed additional properties with PCBs in soil at unacceptable levels, and indicated a need for more extensive sampling. EPA compiled the 1997 and 1998 removal sampling data with its remedial investigation data in a Remedial Investigation Report for OU1, and in June 2003 proposed a comprehensive remedy for OU1, the contaminated properties in the vicinity of the former CDE facility. In September 2003, EPA selected a remedy to address the contaminated soil at properties in the vicinity of the former CDE facility. A projected 2,100 cubic yards of contaminated soil will be excavated from those properties requiring soil cleanup. The remedy includes indoor dust remediation where PCB-contaminated dust is encountered. Additional sampling is planned for properties where right-of-way sampling revealed elevated levels of PCBs, to determine if remediation is required. The sampling will include exterior soils and the collection of dust samples from the interiors of homes.

In 2000, CDE and Dana Corporation initiated discussions with the Borough of South Plainfield regarding the future redevelopment of the Hamilton Industrial Park, and how that redevelopment might be accomplished as part of a remedy for the facility soils and buildings, i.e., OU2. On December 6, 2001, the South Plainfield Borough Council adopted a resolution designating the Hamilton Industrial Park and certain lands in the vicinity of the industrial park as a "Redevelopment Area" pursuant to New Jersey Local Redevelopment and Housing Law. The Borough retained a planning consultant to prepare a redevelopment plan for the designated area, and on July 15, 2002, the Borough Council approved an ordinance adopting the redevelopment plan. Subsequently, the Borough designated a developer for the redevelopment plan. EPA has participated in this future-use planning for the facility as part of the development of the Feasibility Study (FS) for this operable unit.

Enforcement Activities

To date, PRPs identified for the Site and served with notices of liability include DSC, CDE, Dana Corporation, Dana Corporation Foundation, and Federal Pacific Electric Company. Five administrative orders have been issued to various PRPs for the performance of portions of removal actions required at the Site.

The first order, a Unilateral Administrative Order (UAO) issued to DSC in 1997, required the installation and maintenance of site stabilization measures to limit migration of contaminants from the industrial park. These actions included paving driveways and parking areas in the industrial park to minimize dust, installing a security fence, and implementing drainage controls to limit surface run-off.

In July 1998, EPA offered the PRPs an opportunity to perform a comprehensive study of the Site, called a Remedial Investigation and Feasibility Study (RI/FS), to help determine the nature and extent of contamination. After EPA and the PRPs were unable to agree on the scope of the RI required at the Site, EPA elected to perform the RI/FS using federal funds.

In 1998 and 1999, EPA entered into two separate Administrative Orders on Consent (AOCs) with PRPs concerning the removal of PCB-contaminated soil from thirteen properties on Spicer Avenue, Delmore Avenue, and Hamilton Boulevard. DSC and CDE signed the 1998 AOC (addressing six properties), and Dana and CDE signed the 1999 AOC (addressing seven properties). EPA issued another UAO in 1999 to Federal Pacific Electric and DSC, requiring those parties to participate and cooperate in the soil removal at the properties covered by the 1999 AOC. In April 2000, EPA entered into an AOC with DSC requiring the removal of PCB-contaminated soil from one additional property on Spicer Avenue. DSC agreed to perform the work required under the AOC, but subsequently failed to do so. In August 2004, EPA began the removal of PCB-contaminated soil from this property, and the work was substantially completed in September 2004.

On September 30, 2003, after EPA issued a Record of Decision (ROD) for OU1 at the Site, EPA and several of the PRPs entered into negotiations regarding the performance by the PRPs of the Remedial Design and Remedial Action (RD/RA) for OU1, under EPA oversight. EPA and the PRPs were unable to reach an agreement, and on August 24, 2004, EPA issued a UAO to DSC, CDE, and Dana, requiring them to perform the RD/RA for OU1. On September 29, 2004, CDE and Dana informed EPA that they would not comply with the UAO. As of the date of this ROD, DSC has not indicated whether it intends to comply with the UAO.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA has worked closely with public officials and other interested members of the community. Their participation and contributions to the Site investigation and remediation process benefit the Agency in achieving its goal of effectively protecting human health and the environment.

The Proposed Plan and supporting documentation for OU2 were released to the public for comment on July 6, 2004. These documents were made available to the public at the EPA

Administrative Record File Room, 290 Broadway, 18th Floor, New York, New York; and at the South Plainfield Public Library, 2484 Plainfield Avenue, South Plainfield, New Jersey.

The public comment period for the OU2 Proposed Plan began on July 6, 2004, and ended on September 4, 2004. On July 6, 2004, EPA published a notice in the Courier-News newspaper containing information concerning the public comment period for the Site, including the duration of the comment period, the date of the public meeting and availability of the administrative record. A second notice was placed in the Observer-Tribune newspaper on July 9, 2004. The public comment period was initially scheduled to end on August 5, 2004. In response to a written request by CDE and Dana, EPA extended the comment period to September 4, 2004, placing an additional public notice in the Courier-News. A public meeting was held on July 13, 2004, at the South Plainfield Municipal Building located at 2480 Plainfield Avenue, South Plainfield, New Jersey. The purpose of this meeting was to inform local officials and interested citizens about the Superfund process, to discuss the Proposed Plan and receive comments on the Proposed Plan, and to respond to questions from area residents and other interested parties. Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary, attached as Appendix V to this ROD.

SCOPE AND ROLE OF THIS OPERABLE UNIT

For the purposes of planning response actions, EPA has addressed the Site in separate operable units (OUs) The September 2003 ROD selected a remedy for OU1, the contaminated residential, commercial, and municipal properties located in the vicinity of the former CDE facility. This operable unit, referred to as OU2, addresses contaminated soils and buildings at the former CDE facility. EPA's findings indicate the presence of "principal threat" wastes at the facility, which are addressed by this action. Additional operable units will address the contaminated groundwater and the sediments of the Bound Brook.

SUMMARY OF SITE CHARACTERISTICS

Based on the characteristic surface features of the facility property, two major areas can be described. The northwestern portion of the Hamilton Industrial Park is largely paved or occupied by buildings. This area is relatively level. The 18 buildings are constructed of wood frame or brick and several of the buildings are subdivided. The buildings are currently used by a variety of commercial and industrial tenants. The southeast area of the property is primarily an open field, with some wooded areas. The property drops steeply to the southeast, and the eastern portion of the property consists of wetlands bordering the Bound Brook (see Appendix I, Figure 2).

The property is underlain by the Brunswick Formation, a fractured bedrock geologic formation, topped with a layer of overburden that is a mixture of glacial deposits and man-made fill. The overburden is absent beneath a number of the buildings in the northwest corner of the property with increasing thickness towards the Bound Brook, to a maximum depth of about 15 feet. A weathered siltstone unit, approximately one to eight feet thick above the bedrock surface, extends beneath most of the property. It appears that much of the southeastern portion of the property was leveled by the addition of fill material, and that Site wastes were also deposited in this fill. Fill material identified throughout the facility property during the remedial investigation consisted primarily of cinders, ash, brick, glass, metal, slag, and wood fragments. In some areas the fill material was six feet thick.

After geophysical investigations identified a number of subsurface anomolies, test pits were excavated in the central portion of the facility. During excavation of test pits within this anomalous area, fill material, including scrap metal, automobile parts, steel cables, styrofoam sheeting, ceramic electrical components, and empty/crushed drums were unearthed. Near the location of a former truck driving school was found a disposal area for capacitors manufactured by CDE, believed to be those that failed to meet specifications and could not be reused. Some of the highest contaminant levels were found in this dumping area, as discussed in more detail below.

Remedial investigative activities performed for OU2 consisted of sampling building floor dust, surface and subsurface soil, perched water, drainage system sediment, and drainage system standing water. Groundwater monitoring wells were also installed and sampled. There were many chemicals detected in the soils and buildings at the former CDE facility. Some of these chemicals occur as natural components of soil and others are present due to past activities associated with the Site. PCBs were identified as a contaminant of concern in previous investigations that started in 1996. "Aroclor" is the trade name given to commercially manufactured mixtures of PCBs. Each different mixture is identified with a four digit number (e.g., Aroclor-1254). Aroclors were chosen for evaluation because they were used in the former manufacturing processes at the CDE facility and are bioaccumulative and persistent in the environment. The Aroclors detected at the industrial park include Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260. The following summarizes the results of previous investigations and the RI for OU2.

Building Floor Dust

In 1997, EPA's removal program collected a total of 27 wipe samples from 12 of the 18 facility buildings, and building material samples (dust and concrete chips) from two buildings, and analyzed the samples for PCBs, lead, and cadmium. Aroclor-1254, Aroclor-1260, lead, and cadmium contamination were identified in all 12 buildings tested.

Dust samples collected from the 18 facility buildings in the summer of 2000, as part of the RI, revealed PCBs in all 18 buildings, and elevated PCB concentrations (i.e., greater than 500 ppm) were present in three buildings. Concentrations of Aroclor-1254 as high as 8,300 ppm and lead as high as 61,700 ppm were measured in the dust samples. Elevated metals concentrations were also found in all 18 buildings. For example, arsenic, cadmium, chromium, and mercury were measured in each of the buildings at a maximum concentration of 100 ppm, 428 ppm, 894 ppm, and 24.4 ppm, respectively. A discernible, consistent concentration pattern was not generally present for the detected metals.

As part of the soil investigation discussed below, borings were drilled through the concrete slabs in each of the buildings and soil samples were collected from beneath the slab. The intent of this effort was to delineate potential shallow and upper subsurface soil contamination beneath the northwestern portion of the property. The results of this sampling revealed that soils beneath the buildings are contaminated with various contaminants.

Soil

To investigate the potential source areas and determine the extent of soil contamination for the facility property, surface soil samples (i.e., 0 to 2 feet below ground surface) and subsurface soil samples (i.e., greater than 2 feet below ground surface) were collected. During the RI, 96 surface soil samples and 59 subsurface soil samples were collected, including samples collected from test pits excavated within the central portion of the property.

PCBs are the most prevalent contaminants found on the property, and are present as a result of former CDE facility activities. Surface and subsurface soil sample analytical results indicated the presence of PCB compounds in almost all of the samples collected (92 percent). Four individual Aroclors (-1242, -1248, -1254, and -1260) were detected at the property. Surface soil sampling revealed PCB concentrations at a maximum concentration of 51,000 ppm. Of the 96 surface soil samples collected during the RI, 46 samples had concentrations of PCBs greater than 10 ppm and 15 samples had concentrations greater than 500 ppm. Subsurface soil sampling revealed PCB concentrations at a maximum concentration of 130,000 ppm. Of the 59 subsurface soil samples collected during the RI, 16 samples had concentrations of PCBs greater than 10 ppm and 8 samples had concentrations of PCBs greater than 500 ppm.

Test pit excavations unearthed capacitors that appeared corroded and/or partially burned. In addition, during excavation of test pits, white and blue crystalline powder, electrical components, and other materials were unearthed. Based on the observed presence of capacitors in the test pits and interpretation of the geophysical survey, it is estimated that the surface area of buried capacitor debris is approximately 51,100 square feet. The estimated volume of this capacitor disposal area is 7,500 cubic yards.

Dioxins/Furans

Due to the presence of charred debris in the test pits and the fact that burning PCBs can result in the generation of dioxins and dibenzofurans, a highly toxic group of contaminants, a limited set of soil samples were subjected to dioxin and furan analysis. Although analyzed in only a few surface and subsurface soil samples, dioxins and furans were detected during the OU2 RI soils investigation.

- Individual dioxin/furan constituents ranged up to 13.5 parts per billion (ppb). The maximum concentrations for the dioxin/furan homologs (i.e., compounds with an equal number of chlorine substitutions) was 52.8 ppb.

- 2,3,7,8-TCDD (dioxin) was detected at a maximum concentration of 8 ppb.

PCB Congeners

Because of the high concentrations of PCBs present in the soils in the southeastern portion of the Site, a limited number of surface and subsurface soil samples underwent PCB congener analysis. Individual congeners can have a toxicity similar to dioxin and, if present in sufficient concentrations, can pose a risk higher than the PCB congeners that lack the chemical properties of dioxin. This analysis revealed 3,3',4,4'-tetrachlorobiphenyl, a dioxin-like congener, at a maximum concentration of 2,200 ppm.

Volatile Organic Compounds

Elevated concentrations (i.e., up to ppm levels) of chlorinated VOCs in both the subsurface soil and the perched water within and/or immediately adjacent to areas with elevated concentrations of PCB constituents in the soils have likely contributed to the leaching and solubilization of the PCB constituents through co-solvency effects.

- Surface soil sampling revealed trichloroethene (TCE) contamination at a maximum concentration of 47 ppm. Subsurface soil sampling revealed TCE contamination at a maximum concentration of 33 ppm at a depth of three feet.

- Elevated levels of cis-1,2-DCE; trans-1,2-DCE; 1,1-DCE; tetrachloroethene (PCE); TCE; vinyl chloride; methylene chloride; 1,2,4-trichlorobenzene; and 1,2-dichloropropane were also detected in soils.

Semi-Volatile Organic Compounds (SVOCs)

- Elevated concentrations of SVOCs, mainly polycyclic aromatic hydrocarbons (PAHs) (up to 1,554 ppm total PAHs), were detected in soils.

Pesticide Compounds

- Nineteen pesticides were detected across the facility property.

- Aldrin, dieldrin, and 4,4'-DDE were detected at maximum concentrations of 1,100 ppm, 520 ppm, and 1,200 ppm, respectively.

Inorganic Compounds

- Elevated concentrations of 23 different metals were detected across the facility property.

- Arsenic and lead were detected at maximum concentrations of 1,060 ppm and 52,600 ppm, respectively.

Facility Drainage System

As part of the RI, an investigation of the facility drainage system was conducted to determine the level of contamination in the drainage system and to determine the potential for the system to be a source and/or facilitate the transport of contamination.

Dye testing indicated that the facility drainage system is connected to outfalls that discharge to the Bound Brook. The existing facility drainage system sends surface water runoff from the industrial park to the Bound Brook. The investigation also revealed that floor drains located within the buildings at the industrial park are connected to this facility drainage system.

PCBs, VOCs, SVOCs, pesticides, and metals were detected in sediment and standing water samples collected from the catch basins. The Site stabilization measures (i.e., paving and silt fencing) that were implemented by the property owner in 1997 have mitigated the potential for Site contaminants to reach the Bound Brook through overland runoff and through the facility drainage system. However, this migration route continues to remain a potential threat.

Groundwater

Groundwater monitoring wells were installed at the Hamilton Industrial Park at depths ranging from 32 feet to 62 feet, with groundwater found at approximately 35 feet below ground surface (bgs), in the bedrock unit. Based on the investigation conducted to date, groundwater flow is to the northwest (see Appendix I, Figure 3). Sampling results revealed that groundwater at the Site is very highly contaminated with VOCs and PCBs, with PCBs likely present as a result of high VOC content and cosolvency effects. Concentrations of TCE as high as 120,000 ppb and PCBs as high as 84 ppb were measured in the groundwater samples.

Water encountered in the overburden soil and weathered bedrock intervals during the RI was sampled to characterize potential source areas, to evaluate potential zones of contamination, and to identify potential contamination migration pathways. PCBs, PCB congeners, VOCs, SVOCs, pesticides, and metals were detected at elevated concentrations in the perched water sampled during excavation of the test pits and installation of the groundwater monitoring wells.

The horizontal and vertical extent of groundwater contamination has not been determined because all of the existing monitoring wells have been installed within the industrial park and these wells indicate a plume of VOC contamination moving away from the Site to the northwest. Additional groundwater monitoring wells will be installed to adequately characterize flow conditions and the extent of contamination. The results of this additional work will be considered in a subsequent RI/FS for groundwater.

Soils at the industrial park contaminated with PCBs and VOCs appear to be an ongoing source of groundwater contamination. Metals found at elevated levels in soils were not found in the groundwater and, therefore, the presence of metals contamination in facility soils does not appear to be a continuing groundwater threat. Appendix II, Table 11 identifies groundwater contaminants found in monitoring wells on the Site, including their frequency of detection and maximum concentrations detected.

Cultural Resources Assessment

In May 2003, a Stage IA Cultural Resource Investigation was performed pursuant to Section 106 of the National Historic Preservation Act, 16 U.S.C. 47. Based on this Stage IA Investigation, it has been determined that many buildings at the Hamilton Industrial Park have the potential to be eligible for the National Register of Historic Places (NRHP). The NRHP eligibility would derive primarily from the activities of the Spicer Manufacturing Corporation, and its successor, Dana Corporation.

The first major industry within South Plainfield began in 1912 with the construction of the Spicer Manufacturing Corporation plant on the site of the existing Hamilton Industrial Park. The company's founder, Clarence Spicer, designed the "universal joint" transmission while he was an engineering student at Cornell University and received a patent in 1903. Until the company's departure to Ohio in the late 1920's, the Spicer Manufacturing Corporation manufactured the universal joint, an essential drive-shaft component of automobiles, at this facility. As a result of these findings, it has been recommended that standing structures at the Hamilton Industrial Park should be recorded for the New Jersey Historic Preservation Office (NJHPO) and evaluated for NRHP-eligibility. Although the standing structures probably do not meet NRHP-criteria based on architectural integrity, the structures at the Hamilton Industrial Park should be evaluated for historical significance.

Cultural resources survey maps from NJHPO indicate that archeological sites, as well as many lithic scatters, have been identified along the banks of the Bound Brook. Prehistoric settlement patterns were highly focused over more than 8,000 years along the wetland margins of the stream terraces along the Bound Brook. As part of archeological investigations unrelated to EPA's work, one prehistoric site has been identified at the facility property along the north bank of the Bound Brook. Five prehistoric sites were identified in the general vicinity of the former CDE facility, and a large prehistoric site was excavated to the east of the facility property.

The facility property was identified as the location for an early 19^{th} century sawmill. The NJHPO files indicate that the Brooklyn Mills historic mill complex (circa 1702) was formerly located in South Plainfield, and in 1974, surviving foundations were nominated for the NRHP; however, no action was taken to list the property. A blacksmith shop (circa 1895) and the destroyed Randolph Burial Ground (circa 1790) were located north of the Site.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Site Uses: Currently, the Hamilton Industrial Park is zoned for commercial/industrial use. Based upon discussions with the Borough of South Plainfield, EPA does not expect the zoning of this property to change in the near future. In December 2001, the Borough of South Plainfield adopted a resolution designating the Hamilton Industrial Park (OU2) and certain properties in the vicinity of the industrial park as a "Redevelopment Area" pursuant to the New Jersey Local Redevelopment and Housing Law. South Plainfield retained a planning consultant to prepare a redevelopment plan for the designated area, and on July 15, 2002, the Borough of South Plainfield approved the redevelopment plan. The redevelopment plan does not require re-zoning of the industrial park.

Resource Uses: The industrial park consists of approximately 26 acres. A portion of this area is federally-designated wetlands. EPA is using the 500-year flood line as a natural boundary to determine the extent of soil remediation under this action. Approximately six of the facility's 26 acres are within the 500-year floodplain; the remaining 20 acres are being addressed in this OU2. Low-lying wetlands will be addressed as part of a subsequent operable unit that addresses the Bound Brook sediments and adjacent wetlands areas. However, approximately 0.32 acres of wetlands are associated with OU2. Groundwater and surface water in the area are both current and potential future sources of drinking water. The groundwater beneath the facility property is classified by NJDEP as Class IIA, a potential source of drinking water, and potable water wells for the Middlesex Water Company and the Elizabethtown Water Company facility are located within four miles of the Site. EPA is currently evaluating the potential for the Site to adversely impact the groundwater. Groundwater will be addressed in a subsequent operable unit for the Site.

SUMMARY OF SITE RISKS

As part of the RI/FS for OU2, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants in soils and buildings on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects caused by releases of hazardous substance from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The industrial park is bounded by residential, commercial, and municipal properties, the Bound Brook, and the former Lehigh Valley Railroad, Perth Amboy Branch (presently Conrail). The industrial park is currently zoned for commercial/industrial use. According to the Borough of South Plainfield, it is anticipated that the future land use for the industrial park will be commercial/industrial. The baseline risk assessment includes a human health risk assessment and an ecological risk assessment.

Human Health Risk Assessment

The Baseline Human Health Risk Assessment (BHHRA) focused on current and future health effects (e.g., cancer risks and non-cancer health hazards) to both adolescent trespassers (ages 10 to 18 years) and adults in an industrial setting. The industrial scenario, in the absence of institutional controls, included potential trespassing onto the Site by adolescents and on-site indoor workers, outdoor workers, and construction workers. The BHHRA estimated cancer risks and non-cancer health hazards from the Site in the absence of any actions or controls to mitigate such releases. Exposures that could result from current and future direct contact with contaminated soil (surface and subsurface) and indoor dust, such as incidental ingestion, dermal contact, and inhalation of contaminants in air from particulates and vapor intrusion, were evaluated in the BHHRA.

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario:

1) *Identification of Chemicals of Concern* - identifies the contaminants of concern at the Site based on several factors such as contaminant toxicity, frequency of occurrence, and concentration.

2) Exposure Assessment - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated soil or inhaling particulates) by which humans are potentially exposed.

3) Toxicity Assessment - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response).

4) Risk Characterization - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related cancer risks and non-cancer health hazards and the associated uncertainties.

Identification of Chemicals of Concern

There were many chemicals detected in the soils and building dust at the former CDE facility. Some of these chemicals occur as natural components of soil and others are present due to past activities associated with the Site.

PCBs were identified as a contaminant of concern (COC) in previous investigations that started in 1996. "Aroclor" is the trade name given to commercially-manufactured mixtures of PCBs. Each different commercial mixture is identified with a four digit number (e.g., Aroclor-1254). Aroclors were chosen for evaluation because they were used in the former manufacturing processes at the CDE facility and are bioaccumulative and persistent in the environment. The Aroclors detected at the industrial park include Aroclor-1242, Aroclor-1248, Aroclor-125· and Aroclor-1260. In addition, PCB congener data was also collected and used to determine cancer risks associated with dioxin-like PCBs. Other COCs that were identified include, but are not limited to: dioxins, furans, VOCs (such as benzene, 1,1-DCE, PCE, TCE, vinyl chloride), SVOCs and pesticides (such as aldrin, dieldrin, 4,4'-DDT, gamma chlordane and heptachlor epoxide), PAHs (such as benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene) and inorganics (such as arsenic and lead). To determine what chemicals were of concern at the Site, each chemical detected was compared against criteria that included potential toxicity, frequency of detection, historical use at the Site, and exceedance of risk-based screening criteria. The COCs and the range of detected concentrations at the Site are identified in Appendix II, Table 1.

The exposure point concentrations (EPCs) for the COCs, by media, are presented in Appendix II, Table 1. The EPCs are the estimated concentrations in surface and subsurface soil, soil vapors (based on modeling) and dust on indoor surfaces, at the point of human contact, and are used in the exposure assessment component of the quantitative risk evaluation. The EPCs represent current and future exposure locations.

For the purpose of the BHHRA, the facility property was divided into two areas, denoted Area A (generally the western, developed part of the property) and Area B (generally the eastern, undeveloped part of the property), reflecting the historical property usage. The data was subsequently subdivided by type: surface soil, all soil (surface soil combined with subsurface soil samples) and building dust samples, resulting in a total of five data sets.

The statistical analysis identified a number of data points that were considered statistical outliers within the data sets. Therefore, for those data sets, one chemical-specific point EPC was calculated including the outliers and another EPC was calculated excluding the outliers to provide the range of EPCs that are used in the calculation of risks. (The results are discussed below in the section on risk characterization.)

Exposure Assessment

Consistent with Superfund policy and guidance, the BHHRA is a baseline risk assessment and therefore, assumes, no remediation to control or mitigate hazardous substance releases and no institutional controls. Cancer risks and non-cancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at the industrial park. The RME is defined as the highest exposure that is reasonably expected to occur at a site. EPA also estimated cancer risks and non-cancer hazard indices based on central tendency, or average, exposures at the Site.

The CDE facility is bounded by residential, commercial, and municipal properties. Based on the identified current and potential future land uses, the populations most likely to be exposed are:

- Current youth trespasser (ages 10 to 18 years) and outdoor Site workers exposed to surface soil;
- Current/future indoor Site workers exposed to building dust and Site soils and potentially, through soil vapor intrusion to VOCs;
- Future youth trespasser (10 to 18 years) exposed to surface and subsurface soil; and
- Future outdoor Site worker and construction worker exposed to surface and subsurface soil.

The Conceptual Site Model that includes the rationale for inclusion or exclusion of exposure pathways is provided in Appendix II, Table 2.

Toxicity Assessment

The toxicity assessment determines the types of adverse health effects potentially associated with exposures to contaminants at the Site and the relationship between the magnitude of exposure (dose) and severity of adverse effects (response).

Toxicity data for the human health risk assessment were obtained from EPA's Integrated Risk Information System (IRIS), EPA's consensus database for toxicity information. In the absence of an IRIS value, toxicity information was obtained from the EPA's Health Effects Assessment Summary Tables (HEAST) with updates by EPA's National Center for Environmental Assessment, as appropriate. Chemicals lacking toxicity values were evaluated qualitatively. The toxicity values and sources of toxicity values are presented in Appendix II, Table 3 (chronic non-cancer toxicity data summary including the Reference Dose and Reference Concentrations and associated critical effects) and Table 4 (cancer toxicity data summary including Weight of Evidence and Cancer Slope Factors).

Consistent with guidance provided in the 1996 reassessment of the cancer toxicity of PCBs, separate analyses were conducted for dioxin-like PCBs and non-dioxin-like PCBs and the results of these analyses are provided in the Tables. In addition, cancer risks were also calculated for total PCBs. The risks from total PCBs are presented in the tables and were used to calculate the total cancer risks. The results of the analysis of the dioxin-like and non-dioxin-like PCBs are also presented in the Tables.

For the dioxin-assessment, the BHHRA evaluated the risks from exposure to mixtures of PCDDs and PCDFs based on their predicted toxicity relative to 2,3,7,8-TCDD. The concept of Toxicity Equivalence Factors (TEFs) was also applied. The World Health Organization TEFs, identified in EPA's draft Dioxin Reassessment were used in the calculation of the dioxin TEFs.

At the time of the toxicity assessment in 2002, lead was evaluated based on the range of concentrations identified using default parameters in the Adult Lead Model (i.e., 750 to 17,500 ppm). At the time of the assessment, the average value of 1,250 ppm was used as a comparison value for the average lead concentrations found in soil.

Risk Characterization

The BHHRA estimates the potential cancer risks and non-cancer health hazards to human health if no remedial action occurs. A more detailed discussion of the baseline risk assessment can be found in Section 6 of the RI.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen. Excess lifetime cancer risk is calculated from the following equation:

Risk = CDI x CSF

where: **Risk** = a unitless probability (e.g., 1×10^{-4} or one in 10,000) of an individual's developing cancer

CDI = Chronic Daily Intake averaged over 70 years (mg/kg-day)

CSF = Cancer Slope Factor, expressed as $(mg/kg\text{-}day)^{-1}$

These risks are probabilities that usually are expressed in scientific notation (such as 1×10^{-4}). An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the exposure conditions identified in the BHHRA. As stated in the NCP, the acceptable risk range for site-related exposures is 10^{-4} to 10^{-6} (or one in 10,000 to one in a million).

Results of the risk assessment indicate that the cancer risk estimates were above the risk range for current and future trespassers, current and future Site workers (indoor and outdoor), and future construction workers, from the contaminated soils and building dust. For example, results of the risk assessment indicate that the cancer risk estimates for the current trespasser and outdoor Site worker from the contaminated soils in the eastern portion of the Site (including the outliers), identified as Area B in the BHHRA, are 6.0×10^{-2} and 2.4×10^{-1}, respectively. The cancer risks for the trespasser and outdoor worker from the contaminated soils in Area B, not including the risk associated with dioxin-like and non-dioxin-like PCBs, are 3.6×10^{-3} and 1.4×10^{-2}, respectively. The cancer risk estimate for the future trespasser and outdoor Site worker from the contaminated soils in Area B (including the outliers) are 6.0×10^{-2} and 2.4×10^{-1}, respectively. The cancer risk estimated for the future construction worker from the contaminated soils in Area B (including the outliers) is 2.8×10^{-2}. The cancer risks for the future construction worker in Area B, not including the risk associated with dioxin-like and non-dioxin-like PCBs, is 3.0×10^{-3}.

Results of the risk assessment indicate that the cancer risk estimates are within the acceptable risk range for the current and future indoor Site worker in Area A (1.2×10^{-5}). In addition, the cancer risk estimates are within the acceptable risk range for the future construction worker (1.8×10^{-5}) when evaluating exposure to both the surface and subsurface soil in Area A (without the outliers). The RME calculated risks outside EPA's acceptable risk range for each of the populations evaluated in the BHHRA are presented in Appendix II, Table 5. The central tendency exposure-calculated risks are presented in Appendix II, Table 6. These risk estimates are based on current reasonable maximum exposure scenarios and were developed by taking into account default exposure assumptions about the frequency and duration of an individual's exposure to the surface and subsurface soils, building dust, as well as the toxicity of the contaminants of concern.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a chronic time period of seven years or more, with a reference dose (RfD) derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious health effects. The ratio of the exposure dose to the reference dose is called a Hazard Quotient (HQ). An HQ of less than or equal to 1 indicates that the exposure dose is less than or equal to the RfD, and that noncarcinogenic health effects are unlikely to occur. The Hazard Index for an exposure pathway is generated by summing the HQs for all chemicals of concern for a singular pathway and across pathways of exposure. An HI of less than or equal to 1 indicates that noncarcinogenic health effects are unlikely to occur. A Hazard Index of greater than 1 indicates the likelihood that site-related exposures may result in noncarcinogenic health effects.

The HQ is calculated as follows:

HQ = CDI/RfD

where: **HQ** = hazard quotient
CDI = chronic daily intake (mg/kg-day)
RfD = reference dose (mg/kg-day)

In the evaluation of non-cancer human health hazards, EPA found that the non-cancer Hazard Indices for the future trespasser and the outdoor Site worker from the contaminated soils in Area B, the eastern portion of the Site (including the outliers), are 1,100 and 1,700, respectively. The non-cancer Hazard Index for the future construction worker from the contaminated soils in Area B is 3,800. The non-cancer Hazard Index for the current and future indoor Site worker is 150. The non-cancer Hazard Index for the future construction worker when evaluating exposure to both the surface and subsurface soil in Area A is 21. This information is presented in Appendix II, Tables 7 and 8. The calculated Hazard Indices for each of the receptors evaluated all exceed EPA's goal of protection of 1.

The evaluation of lead indicated an average concentration of 11,000 ppm in soil in Area A and an average indoor dust concentration of 5,248 ppm, exceeding the average concentration of 1,250 ppm recommended based on default values calculated using the Adult Lead Model.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis;
- environmental parameter measurement;
- fate and transport modeling;
- exposure parameter estimation; and
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. For example, the small number of soil samples for certain analytes (i.e., dioxins/furans) or media (i.e., surface soil in Area A) limited the amount of data available for use in the risk assessment. Confidence in risk estimates typically increases with increasing sample size. Incorporation of more data may increase, decrease, or have no effect on risk estimates.

Environmental chemistry analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure. During the evaluation of chemicals found in Site soils, the statistical analysis identified a number of data points that were considered statistical outliers. To calculate an EPC, a statistical analysis of the upper confidence limit on the mean was conducted based on the full data set including the outliers and a second EPC was calculated using a data set that excluded the outliers. In most cases, the data set with outliers contributed significantly to the calculated non-cancer health hazards and cancer risks. Both EPC data sets, including outliers and excluding outliers, were used to calculate the non-cancer health hazards and cancers risks. As a result, the risk assessment provides ranges of risks and hazards to the Site receptors.

In order to reduce the uncertainty associated with models used in the risk assessment, site-specific parameters were used, where applicable. For example, the Johnson and Ettinger Model for subsurface vapor intrusion to buildings was used to evaluate the soil-to-indoor-air pathway. This model is considered to be conservative and may overestimate the levels of COCs in the indoor air. However, site-specific parameters were used in the model, where available, reducing the level of uncertainty associated with this model.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as in the difficulties of assessing the toxicity of a mixture of chemicals. For example, due to the high concentrations of PCBs and the resultant high Hazard Quotient and Hazard Index values, there is uncertainty associated with the estimated Hazard Quotient and Hazard Index values, primarily due to potential unknown dose-response mechanisms at these concentrations. However, although the hazard may be over- or underestimated, the magnitude of exceedance of EPA's benchmark of acceptable non-cancer hazard indicates the likelihood of non-cancer health effects associated with industrial exposure to Site soils.

The toxicity values used in the risk assessment represent the most current values recommended by EPA. The uncertainties surrounding the cancer slope factor estimates extend in both directions (i.e., possible underestimate or overestimate of cancer potency factors). The cancer slope factors represent plausible upper bound estimates, which mean that the EPA is reasonably confident that the actual cancer risks will not exceed the estimated risk calculated using the cancer slope factor, but it may be lower.

Therefore, these uncertainties are addressed by making health protective assumptions concerning risk and exposure parameters throughout the assessment. More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the risk assessment report, which is part of the Administrative Record for the Site.

Ecological Risk Assessment

A four-step process is utilized for assessing site-related ecological risks for a reasonable maximum exposure scenario:

1) Problem Formulation - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study.

2) Exposure Assessment - a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations.

3) Ecological Effects Assessment - literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors.

4) Risk Characterization - measurement or estimation of both current and future adverse effects.

An ecological risk assessment (ERA) was performed at the former CDE facility. The objective of the ERA was to assess potential risks to terrestrial receptors from contaminants found at the Site. The ecological assessment consisted of a number of field investigations including a wetland investigation, a terrestrial and aquatic habitat characterization, a wildlife survey, and a floodplain assessment. In addition, an evaluation of documented endangered and threatened species in the vicinity of the former CDE facility was conducted. The ecological risk assessment considered the facility soils as the primary medium of concern. Although no significant habitat for ecological receptors was identified in the developed portion of the facility, the undeveloped portion of the industrial park was deemed to support a diverse assemblage of wildlife and as representing significant habitat for ecological receptors. Based on the ERA, ecological receptors associated with the undeveloped areas of the facility property may be at excess risk from site-related contaminants. An ERA for the Bound Brook will be conducted as part of the operable unit that includes surface water and associated wetlands.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment.

The following remedial action objectives for contaminated soils and buildings will address the human health risks and environmental concerns at the former CDE facility:

- Reduce or eliminate exposure to contaminated soils and building material to levels that are protective of commercial or industrial use, and protective of the environment;

- Prevent/minimize migration of contamination to the Bound Brook from surface soils; and

- Reduce or eliminate the migration of Site contaminants from soil and debris to the groundwater.

In evaluating how best to achieve these RAOs, the planned redevelopment contemplated by the Borough of South Plainfield is a significant consideration. The Borough of South Plainfield has communicated its intention to pursue the redevelopment of the former CDE facility for commercial/retail uses, and EPA has developed Remediation Goals that would be protective under a current-use scenario and a redevelopment scenario, but that would not allow for unrestricted use of the property (e.g., residential use would not be contemplated).

EPA's August 1990 guidance entitled "A guide on Remedial Actions at Superfund Sites with PCB contamination" recommends a cleanup goal between 10 - 25 ppm for commercial/industrial properties. For this Site, EPA has selected a Remediation Goal of 10 ppm for PCBs for direct contact with soils. The State of New Jersey has developed a State-wide non-residential direct contact soil cleanup criterion for PCBs of 2 ppm for commercial/industrial properties, which is a "To Be Considered" criterion. EPA has evaluated the extent of surface soil PCB contamination at the CDE Site and estimates that 96 percent of the surface soil exceeds NJDEP's 2 ppm cleanup criteria, whereas 92 percent of the Site surface area exceeds EPA's 10 ppm cleanup goal. This very small difference in area, coupled with the comprehensive redevelopment plans proposed by the Borough, indicate that a remedy preventing direct contact with contaminated soil using EPA's 10 ppm Remediation Goal would be adequately protective to NJDEP's more stringent 2 ppm criterion.

The RI concluded that the Site poses a potential threat of off-site contaminant migration to the Bound Brook through surface run-off or the existing drainage system, but not through subsurface or groundwater migration. Thus, remedies addressing surface soils would also require measures to manage/prevent off-site migration to the Bound Brook.

EPA has identified principal threat wastes at the CDE Site: soils and debris contaminated with elevated levels of PCBs and VOCs that act as "source materials" because this material contains hazardous substances, pollutants or contaminants that are considered a reservoir for migration of contamination to groundwater. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

EPA's 1990 PCB guidance states that principal threats will include contaminated soils at concentrations greater than or equal to 500 ppm PCBs at commercial or industrial sites, and EPA has identified this as the principal threat Remediation Goal for soils at the Site. New Jersey has also developed an impact-to-groundwater cleanup criterion for VOCs in soils, which EPA has identified as a Remediation Goal for the Site to address soils that may act as a continuing source of groundwater contamination.

EPA's April 1998 guidance entitled "Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites" recommends that, for commercial/industrial exposure scenarios, a range of 5 ppb to 20 ppb (TEQs) should generally be used as a starting point for setting Remediation Goals for sites with dioxin in surface soil. Very limited dioxin testing has been performed to date, and additional testing will be required to confirm that dioxin is a concern at the Site. For this Site, EPA has selected a Remediation Goal of 5 ppb for dioxin in soils.

While other contaminants, such as arsenic and lead, were identified in the risk assessment as incremental contributors to the direct contact risks posed by the Site, EPA has not identified specific Remediation Goals for these other contaminants because the primary risk driver, PCBs, is ubiquitous across the Site, and EPA expects that remedies that adequately address the risks posed by PCBs will also address these other contaminants.

DESCRIPTION OF REMEDIAL ALTERNATIVES

CERCLA requires that each remedial alternative be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility or volume of hazardous substances.

CERCLA requires that if a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at a site above levels that allow for unlimited use and unrestricted exposure, EPA must review the action no less often than every five years after initiation of the action. In addition, institutional controls (*e.g.*, a deed notice, an easement or a covenant) to limit the use of portions of the property may be required. These use restrictions are discussed in each alternative as appropriate. The decision as to what kind of restriction is needed may need to wait until after completion of the remedial alternative selected in the ROD. Consistent with expectations set out in the NCP, none of the remedial alternatives evaluated for OU2 rely exclusively on institutional controls to achieve protectiveness. The time frames below for construction do not include the time for remedial design or the time to procure contracts.

The remedial alternatives evaluated for OU2 were limited for several reasons. For example, although several different methods are available to decontaminate PCB-contaminated building surfaces (*i.e.*, vacuum/pressure wash, acid etch, scarification and wipe/solvent wash), these methods were evaluated as a single alternative to allow the parties performing the work the flexibility to select the most appropriate method based on the specific conditions encountered in each of the buildings.

Due to the chemical and physical heterogeneity of the contaminated soil, the alternatives that could permanently address the facility soil were limited. Chemical characteristics of the soil include PCBs, VOCs, SVOCs, and metals. Physical characteristics of the soil include the presence of man-made fill (gravel, cinders, ash, slag) and debris (brick, glass fragments, wood, metal fragments, capacitors). Since principal threat wastes are associated with OU2, treatment of the contaminated soil was considered as a principal element of some of the alternatives developed for OU2.

Common Elements

Several of the soil alternatives include common components. Alternatives S-2 through S-5 require the excavation of the capacitor disposal area and off-site disposal of approximately 7,500 cubic yards of soil and debris found therein (see Appendix I, Figure 4). Although the capacitor disposal area poses a principal threat, treatment of all of the excavated debris was not considered because of the nature of the waste, which is primarily debris, and not amenable to treatment. The Toxic Substances Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA) are federal laws that mandate procedures for managing, treating, transporting, storing, and disposing of hazardous substances. The excavated soil and debris from the capacitor disposal area, with PCB concentrations greater than 50 ppm would be transported to a TSCA landfill. Any other contaminated soils that are transported off-site for disposal would be subject to RCRA disposal regulations.

Since contaminants will remain in soil above levels that would allow for unrestricted use, Alternatives S-2 through S-5 all require that institutional controls be employed to ensure that any future Site activities will be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property. In addition, since Alternatives S-1 through S-5 result in contaminants remaining on-site, a review of the Site at least every 5 years will be required. The anticipated future uses for the industrial park being considered by the Borough of South Plainfield are consistent with the future-use scenario incorporated in Alternatives S-2 through S-5.

Alternatives S-3 through S-5 require contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs to be capped with a multi-layer cap. Hardscape (i.e., that part of the Site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping.

Due to the limited dioxin data collected at the Site, Alternatives S-2 through S-5 would require additional soil sampling to determine if dioxins and furans would need to be addressed independent of the PCB contamination.

Some of the structures at the industrial park have the potential to qualify as historic properties because of the activities of the Spicer Manufacturing Corporation. As a result, further investigation must be performed to determine if the on-site structures qualify as historic properties. Since all of the active remedial alternatives would affect the structures to some degree, if any structure qualifies as an historic property, it will be necessary to develop an approach to mitigate the effects of the remedial action. It is expected that such an approach would involve performing additional historical research and recordation of the structures.

Based on the results of the Stage IA Cultural Resource Investigation, the southeastern portion of the facility property may contain former land surfaces and associated cultural resources that relate to pre-historic and/or early historic time periods. Alternatives S-2 through S-5 may expose or disturb archeological/cultural resources that may be eligible for the NRHP. If eligible subsurface archeological sites are discovered within the facility property, and the remedial alternative will affect these significant properties, than an approach, such as data recovery, would be developed to resolve or mitigate the effects of the remedial action.

Because the Borough of South Plainfield's redevelopment plans anticipate commercial reuse of the property, EPA considered the potential for vapor intrusion of VOCs from residual contamination. EPA concluded that vapor intrusion may pose a human health concern under various future-use scenarios. While EPA expects that Alternatives S-2 through S-5 would substantially reduce the potential for vapor intrusion, vapor mitigation systems would need to be evaluated for on-site buildings under any of the remedial alternatives for soils.

Remedial alternatives for OU2 soils are presented below:

<u>Alternative S-1: No Action</u>

Capital Cost:	$0
Annual Operation and Maintenance:	$0
Present Worth:	$0
Estimated Construction Time frame:	None

Regulations governing the Superfund program generally require that the "no action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the Hamilton Industrial Park to prevent exposure to the soil contamination and the contaminated soil would be left in place. Existing temporary measures (i.e., paving and fencing) would provide limited protectiveness, if maintained. Redevelopment of the industrial park would pose a high risk of direct contact exposure to construction workers and future users, and may exacerbate off-site contaminant migration.

Alternative S-2: Excavation/Off-Site Disposal/Institutional Controls

Capital Cost:	$111,000,000
Annual Operation and Maintenance (30 years):	$124,000
Present Worth:	$114,000,000
Estimated Construction Time frame:	2 years

This alternative consists of the excavation of soils containing PCBs at concentrations greater than 10 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminants other than PCBs. Under this alternative, an estimated 278,500 cubic yards of contaminated soil would be excavated and transported off-site for proper disposal at a RCRA or TSCA-regulated landfill, as appropriate, based on the concentrations of PCBs in the excavated soils (see Appendix I, Figure 5). This would include an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas that would be excavated and transported off-site for disposal. If necessary, in order to meet the requirements of the disposal facilities, contaminated soil would be treated prior to land disposal using a technology from among the range of technologies identified in the OU2 Feasibility Study.

Post-excavation sampling would be performed to confirm that the specified cleanup levels have been achieved. Any cleanup level exceedances detected during the post-excavation confirmatory sampling would result in additional excavation, treatment (if necessary), and off-site disposal. Once excavation activities had been completed, the excavations would be backfilled with clean soil or non-contaminated on-site soils that had been excavated (i.e., soils excavated to reach contaminated soils at depth) and the surface would be paved and/or vegetated based on the planned future uses.

Alternative S-2 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future Site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Alternative S-3: "Principal Threat" Excavation; Off-Site Disposal/Multi-Layer Cap/Institutional Controls

Capital Cost:	$58,000,000
Annual Operation and Maintenance (30 years):	$560,000
Present Worth:	$72,000,000
Estimated Construction Time frame:	1 to 2 years

This alternative consists of the excavation of soils containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's IGWSCC for contaminants other than PCBs. Under this alternative, an estimated 114,500 cubic yards of contaminated soil would be excavated and transported off-site for proper disposal at a TSCA-regulated landfill (see Appendix I, Figure 6). This amount would include an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas that would be excavated and transported off-site for disposal. If necessary, in order to meet the requirements of the disposal facilities, contaminated soil would be treated prior to land disposal using a technology from among the range of technologies identified in the OU2 Feasibility Study.

Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped through the use of a multi-layer cap. Hardscape (i.e., that part of the Site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. The total area to be capped would be approximately 20 acres.

In some instances, contaminated soil could be re-used on-site. For example, soil with contaminant concentrations below the specified cleanup levels that had been excavated to remove more contaminated soil located at depth might be reused as fill under the multi-layer cap.

Alternative S-3 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future Site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Alternative S-4: Soil Vapor Extraction/Solidification/Multi-Layer Cap/Institutional Controls

Capital Cost:	$25,000,000
Annual SVE Operating Cost (4 years):	$330,000
Annual Operation and Maintenance (30 years):	$440,000
Present Worth:	$36,000,000
Estimated Construction Time frame:	2 to 3 years

This alternative consists of a combination of technologies to address the contaminated soils at the former CDE facility. In order to address VOCs above IGWSCC, this alternative includes installation of a soil vapor extraction (SVE) system. In addition, this alternative includes the solidification of soils with PCBs at concentrations greater than 500 ppm. Approximately 107,000 cubic yards of soil would be solidified. This alternative also includes the excavation of the capacitor disposal area and off-site disposal of approximately 7,500 cubic yards of soil and debris found therein. If necessary, in order to meet the requirements of the disposal facilities, contaminated soil would be treated prior to land disposal using a technology from among the range of technologies identified in the OU2 Feasibility Study.

Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped through the use of a multi-layer cap. Hardscape (i.e., that part of the Site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. The total area to be capped would be approximately 20 acres.

Alternative S-4 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future Site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Alternative S-5: Low Temperature Thermal Desorption/Multi-Layer Cap/Institutional Controls

Capital Cost:	$40,000,000
Annual LTTD Operating Cost (4.5 years):	$142,000
Annual Operation and Maintenance (30 years):	$440,000
Present Worth:	$52,000,000
Estimated Construction Time frame:	5 to 7 years

This alternative consists of the thermal desorption of approximately 107,000 cubic yards of soil containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed IGWSCC for contaminants other than PCBs. This alternative would require the construction and operation of a Low Temperature Thermal Desorption (LTTD) unit at the Site. LTTD is a physical separation process, whereby contaminants are typically destroyed in a combustion chamber and the off-gas is treated. Under this alternative, contaminated soils would be treated on-site. The excavated areas would be backfilled with the treated soils. In addition, an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas would be excavated and transported off-site for disposal.

For cost-estimation purposes, the FS assumed that all of the 107,000 cubic yards of soil would be amenable to on-site treatment; however, several factors may limit the ability of an on-site LTTD unit to accommodate this entire volume. The capacitor disposal areas have already been excluded from the treatable soil volume in this Alternative, but other soil handling factors (additional debris, mixed PCB and VOC contamination) may preclude the cost-effective treatment of some soil. Also, the PCB contaminant levels vary widely across the Site, and the most highly-contaminated soils may not be effectively treated with an on-site unit. Off-site disposal would be required for these soils that are not amenable to treatment. Alternative S-5 assumes that the volume of soils sent off-site for disposal would be far more limited than under the S-3/S-5 Hybrid Alternative discussed below.

Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped through the use of a multi-layer cap. Hardscape (i.e., that part of the Site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. The total area to be capped is approximately 20 acres.

Alternative S-5 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future Site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

S-3/S-5 Hybrid Alternative: "Principal Threat" Excavation; Low Temperature Thermal Desorption/Off-Site Disposal/Multi-Layer Cap/Institutional Controls

Capital Cost:	$51,000,000
Annual LTTD Operating Cost (3 years):	$142,000
Annual Operation and Maintenance (30 years):	$440,000
Present Worth:	$62,000,000
Estimated Construction Time frame:	2 to 3 years

In the Proposed Plan for OU2, EPA identified as the preferred alternative for soils a combination, or hybrid, of Alternatives S-3 and S-5. This alternative requires excavation of the approximately 107,000 cubic yards of soil containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed IGWSCC for contaminants other than PCBs. The excavated soil that is suitable for thermal desorption would be treated using a LTTD unit, and the soil that cannot be successfully treated using LTTD would be transported off-site for disposal.

This alternative would require the construction and operation of a LTTD unit at the Site. LTTD is a physical separation process, whereby contaminants are typically destroyed in a combustion chamber and the off-gas is treated. This alternative assumes that half the 107,000 cubic yards of excavated soils would be treated on-site, and the other half will be transported off-site for disposal. The excavated areas would be backfilled with the treated soils. In addition, an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal area would be excavated and transported off-site for disposal.

Whether the excavated soil is treated using the LTTD unit will depend on factors such as the levels of debris found in the soil, the presence of high concentrations of PCBs which would require very long residence times, and the presence of high VOC concentrations that might result in excessive vapor releases during soils handling in preparation for the LTTD unit. Off-site disposal would be required for these soils that are not amenable to treatment or cannot be treated cost-effectively.

Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped through the use of a multi-layer cap. Hardscape (i.e., that part of the Site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. The total area to be capped is approximately 20 acres.

The S-3/S-5 Hybrid Alternative would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future Site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Remedial alternatives for OU2 buildings are presented below:

Alternative B-1: No Action

Capital Cost:	$0
Annual Operation and Maintenance:	$0
Present Worth:	$0
Estimated Construction Time frame:	None

Regulations governing the Superfund program generally require that the "no action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the 18 buildings located at the Hamilton Industrial Park to prevent exposure to the contaminated structures.

Alternative B-2: Decontamination and Surface Encapsulation/ Institutional Controls

Capital Cost:	$12,000,000
Annual Operation and Maintenance (30 years):	$220,000
Present Worth:	$18,000,000
Estimated Construction Time frame:	1 to 2 years

In this alternative, surface decontamination would be combined with surface encapsulation and institutional controls. Decontamination involves the removal of surface contamination from surfaces up to several centimeters in depth depending on the method used (*i.e.*, vacuum/pressure wash, acid etch, scarification and wipe/solvent wash). In many cases, extensive decontamination would be required to render buildings acceptable for future use. Surface encapsulation (e.g., epoxy coating) allows PCB-contaminated porous surfaces to be managed in place while the buildings remain in service, provided that the buildings are surface washed, encapsulated, and marked to indicate the presence of PCBs.

This alternative would also include long-term sampling and monitoring to assess any changes in Site conditions. Five-year reviews, as required by CERCLA, would also be performed to assess the need for future remedial actions. Public awareness programs would be implemented to inform the public and local officials about potential hazards posed by exposure to the contaminated buildings materials. In addition, institutional controls would be employed to ensure that any future Site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and that the buildings would not be used for any purposes that would be inconsistent with the continued presence of PCBs within the building materials, such as residential use. These institutional controls would likely include: 1) an informational notice concerning the Site conditions; and 2) a legal restriction on the future use of the facility property.

In order to implement this alternative, some or all of the tenants at the Hamilton Industrial Park would need to be relocated pursuant to the Uniform Relocation Act.

Alternative B-3: Demolition/Off-Site Disposal

Capital Cost:	$7,000,000
Annual Operation and Maintenance:	$0
Present Worth:	$7,000,000
Estimated Construction Time frame:	1 to 2 years

This alternative consists of the demolition of the 18 buildings located at the Hamilton Industrial Park. Approximately 22,000 tons of debris would be transported off-site for disposal. Since the debris would be disposed of off-site, it is anticipated that there would be no need for institutional controls, no five-year review requirement, and no long-term monitoring requirement in connection with the building structures. Five-year reviews of the Site itself would still be necessary.

Debris designated for off-site disposal would be subjected to analysis for disposal parameters and transported off-site for treatment (as necessary) and disposal in accordance with applicable regulations. During the remedial design, decontamination prior to demolition could be considered to reduce the quantity of hazardous waste. Non-contaminated building debris could be recycled and could be reused on the Site.

In order to implement this alternative, eligible tenants at the Hamilton Industrial Park would need to be relocated pursuant to the Uniform Relocation Act.

COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting the remedy, EPA considered the factors set out in CERCLA Section 121, 42 U.S.C. § 9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR § 300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

Threshold Criteria *- The first two criteria are known as "threshold criteria" because they are the minimum requirements that each response measure must meet in order to be eligible for selection as a remedy.*

1. **Overall Protection of Human Health and the Environment**
Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Soils

Alternative S-1, the no action alternative, is not protective of human health and the environment because it does not eliminate, reduce, or control risk of exposure to contaminated soil through off-site disposal, treatment, engineering controls, and/or institutional controls.

Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through off-site disposal/treatment, engineering controls, and institutional controls.

Alternative S-2, excavation and off-site disposal, would remove soil with PCB concentrations above the Remediation Goal of 10 ppm and, therefore, would provide the highest level of protection to both human and environmental receptors from contact with contaminants in the soil.

There would be no local human health or environmental impacts associated with off-site disposal because the contaminants would be removed from the Site to a secure location. Alternative S-2 would eliminate the actual or potential exposure of property owners/occupants to contaminated soils.

Alternatives S-3 through S-5 and the S-3/S-5 Hybrid Alternative would mitigate the potential human health and ecological risks associated with exposure to contaminated soils through the placement of a multi-layer cap and/or hardscape, and through institutional controls such as land-use restrictions, and public education. However, contaminated soils would remain in place above the Remediation Goal for direct contact of 10 ppm for PCBs. The protection would persist only as long as the cap was actively maintained, since contaminants would remain, and a breach of the cap could re-establish human and/or ecological exposure routes.

Alternatives S-2, S-3, S-5 and the S-3/S-5 Hybrid Alternative would achieve the RAOs at the completion of construction. RAOs would be achieved in Alternative S-4 after completion of the SVE treatment and the subsequent solidification of the residual PCB-contamination approximately 4 years after the initiation of construction.

Buildings

Alternative B-1, the no action alternative, is not protective of human health and the environment because it does not eliminate, reduce, or control risk of exposure to contaminated soil through off-site disposal, treatment, engineering controls, and/or institutional controls. In addition, additional migration of contamination could occur over time under Alternative B-1 as a result of disturbance by humans and natural processes.

Alternative B-2, decontamination and surface encapsulation, would provide some protection to the tenants/occupants at the industrial park from future exposure to contaminated buildings through sealing the contaminated surfaces with an epoxy paint, and through institutional controls such as use restrictions and public education. However, contaminated building materials would remain in place. The protection would persist only as long as the containment measures were actively maintained, since contaminants would remain on-site, and a breach of containment measures could re-establish exposure routes.

Alternative B-3, demolition and off-site disposal, would remove contaminated buildings and, therefore, would protect both human and environmental receptors from contact with contaminants.

There would be no local human health or environmental impacts associated with off-site disposal because the contaminants would be removed from the Site to a secure location. Alternative B-3 would eliminate the actual or potential human exposure to the contaminated structures.

2. **Compliance with applicable or relevant and appropriate requirements (ARARs)**

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and 40 CFR § 300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and *appropriate federal laws and state environmental or facility siting laws, collectively referred to as "ARARs", unless such ARARs are waived under CERCLA Section 121(d)(4).*

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes or provides a basis for invoking a waiver.

Soils

Alternative S-1 Since action-specific ARARs apply to actions taken, they are not applicable to the no action alternative.

Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative would comply with action-specific ARARs. Among the major ARARs applicable to the remedial action for OU2, RCRA and TSCA are federal laws that mandate procedures for managing, treating, transporting, storing, and disposing of hazardous substances. All portions of RCRA and TSCA that are applicable or relevant and appropriate to an OU2 response action would be met by Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative.

EPA's August 1990 PCB guidance recommends a range between 10 and 25 ppm as a cleanup goal for commercial/industrial properties. The State of New Jersey has developed a State-wide, non-residential direct contact soil cleanup criterion for PCBs of 2 ppm for commercial/industrial properties, which is "To Be

Considered" criterion. EPA has selected a Remediation Goal of 10 ppm for use in Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative. Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative would provide adequate protection consistent with these guidelines.

Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative would require the implementation of measures to protect wetlands and endangered species, in accordance with federal and state ARARs, such as the "Protection of Wetlands Executive Order," "Wetlands Protection at Superfund Sites," the "Wetlands Act of 1970," the "Freshwater Wetlands Protection Act Rules," the "Endangered Species Act," etc.

Subsurface areas in the southeastern portion of the facility property may contain former land surfaces and associated cultural resources that relate to pre-historic and/or early historic time periods. Therefore, Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative may expose or disturb archeological/cultural resources that may be eligible for the NRHP. If subsurface archeological sites are discovered within the facility property and determined to be eligible for the NRHP under Criterion D (properties that have yielded or may be likely to yield information important in prehistory or history), and if the project would affect these significant properties, then it would be necessary to develop an approach to resolve or mitigate the effects of the remedial action, such as data recovery.

Buildings

Alternative B-1 would not satisfy contaminant-specific ARARs. No action and location-specific ARARs would be triggered by the No Action Alternative.

Alternatives B-2 and B-3 would prevent direct contact with contaminated surfaces in excess of the Remediation Goals and would comply with all ARARs. TSCA is an ARAR. Alternative B-2 would comply with 40 CFR 761.30(p), regarding the use of PCB-contaminated surfaces. Under Alternative B-3, PCB-contaminated building materials would be remediated consistent with 40 CFR 761.79. RCRA is a federal law that mandates procedures for managing, treating, transporting, storing, and disposing of hazardous substances. All portions of RCRA that are applicable or relevant and appropriate would be met by Alternatives B-2 and B-3.

Some of the structures at the industrial park have the potential to qualify as historic properties because of the activities of the Spicer Manufacturing Corporation. As a result, further investigation must be performed to determine if the on-site structures qualify as historic properties. Since Alternatives

B-2 and B-3 would affect the structures, under either of these alternatives it would be necessary to develop an approach to mitigate the effects of the remedial action. It is expected that such an approach would involve performing additional historical research and recordation of the structures.

Primary Balancing Criteria - The next five criteria are known as "primary balancing criteria". These criteria are factors with which tradeoffs between response measures are assessed so that the best option will be chosen, given site-specific data and conditions.

3. **Long-term Effectiveness and Permanence**
Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

Soils

Alternative S-1 offers no long-term effectiveness and permanence.

Alternative S-2 would be most effective and permanent, as long-term risks would be greatly reduced, since contaminated soils would be permanently removed.

Alternative S-3 would reduce long-term risks, since highly contaminated soils (principal threat wastes) would be removed. Off-site treatment/disposal of the contaminated soil at a secure, permitted hazardous waste facility is reliable because the design of such facilities includes safeguards intended to ensure the reliability of the technology and the security of the waste material. Alternative S-3 relies on capping, other engineering controls, and institutional controls to reduce future health risks to property owners/occupants associated with exposure to contaminated soils.

Alternative S-4 would only immobilize the principal threat waste on the Site and would rely on the effectiveness of the SVE and solidification technologies, capping and institutional controls to reduce future health risks to property owners/occupants associated with exposure to highly-contaminated soils. Alternatives S-2, S-3, and S-5 are more protective over the long-term than S-4 because they remove and treat the principal threat waste.

Alternative S-5 would reduce long-term risks, since highly contaminated soils (principal threat wastes) would be removed and treated on-site in a LTTD unit. Like Alternative S-3, Alternative S-5 relies on capping, other engineering controls, and institutional controls to reduce future health risks to property owners/ occupants associated with exposure to contaminated soils.

The S-3/S-5 Hybrid Alternative would reduce long-term risks, since highly contaminated soils (principal threat wastes) would be removed and either treated on-site using LTTD, or disposed of off-site at a secure, permitted hazardous waste facility. As noted in the discussion of Alternative S-3, the design of such facilities includes safeguards to ensure the reliability of the technology and the security of the waste system. The S-3/S-5 Hybrid Alternative also relies on institutional controls to reduce future health risks to property owners/occupants associated with exposure to contaminated soils.

Buildings

Alternative B-1 offers no long-term effectiveness and permanence.

Alternative B-2 would not be permanent or as effective over the long term, since the sealant would degrade over time, requiring maintenance, and deed restrictions may not reliably reduce future risks to property owners/occupants associated with exposure to contaminated surfaces.

Under Alternative B-3, long-term risks would be eliminated, since contaminated buildings would be permanently removed. Off-site treatment/disposal of the contaminated building debris at a secure, permitted hazardous waste facility is reliable because the design of such facilities includes safeguards intended to ensure the reliability of the technology and the security of the waste material.

4. **Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment**

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Soils

Alternative S-1 would not achieve any reduction in the toxicity, mobility or volume of contaminated soil, since the soil would remain in place.

Alternative S-2 does not include treatment as a principal element, though the alternative would reduce contaminant mobility through removal and disposal of the soils at an approved off-site facility. Off-site treatment, when required, would reduce the toxicity and volume of the contaminated soils and debris prior to land disposal. Soils with PCB concentrations less than 50 ppm would be excavated and transported to a RCRA landfill permitted to accept low levels of PCB waste. Soils with PCB concentrations greater than 50 ppm would be excavated and transported to a TSCA landfill. It is anticipated that hazardous material would not be destroyed under Alternatives S-2 through S-4, unless the disposal facility required treatment prior to landfilling.

Alternative S-3 does not include treatment as a principal element, though the alternative would reduce contaminant mobility through removal and disposal of the soils at an approved off-site facility. Furthermore, off-site treatment, when required, would reduce the toxicity and volume of the contaminated soils and debris prior to land disposal.

Alternative S-4 would result in a reduction of contaminant toxicity, mobility, and volume through treatment by the SVE system and excavation of the capacitor disposal areas. Alternative S-4 would also result in a reduction of mobility, but an increase in volume through solidification of PCB-contaminated soils at concentrations greater than 500 ppm. Due to uncertainties associated with the implementability of this alternative (discussed in more detail, below), and the fact that nearly all the contaminated soil would remain on site, Alternative S-4 was considered the least effective at satisfying this criterion over the long term, when compared to the other active remedial alternatives.

Alternative S-5 would be most effective in satisfying this criterion, as soils that undergo thermal desorption would exhibit a significant reduction in contaminant toxicity, mobility, and volume.

The S-3/S-5 Hybrid Alternative would reduce contaminant toxicity, mobility and volume in the soils treated by LTTD. The contaminant mobility in the soils sent off-site for disposal would also be reduced, and where off-site treatment was required prior to land disposal, this alternative would also reduce the toxicity and volume of the contaminated soils and debris.

Buildings

Alternative B-1 would not achieve any reduction in the toxicity, mobility, or volume of contaminated building material.

Alternative B-2 would result in a reduction of mobility through encapsulation, but no substantial reduction of toxicity or volume of contaminants.

Alternative B-3 does not include treatment as a principal element, though the alternative would reduce contaminant mobility through removal and disposal of the building debris at an approved off-site facility.

5. **Short-term Effectiveness**

Short-term effectiveness addresses short-term risks to the community, workers and the environment during the construction and implementation of the remedial alternatives, and the effectiveness and reliability of protective and mitigative measures.

Soils

Alternative S-1, the no action alternative, poses no short-term risks.

Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative present short-term risks because of the potential for exposure associated with excavation and transportation of contaminated soils. Alternative S-2 presents the highest short-term risk because it would require the excavation and transportation off-site of the largest volume of contaminated soils. Alternatives S-4 and S-5 present a higher short-term risk than Alternative S-3 because of the greater potential for exposure associated with treating soils on-site. Alternative S-5 would result in higher air emissions than the other alternatives. The S-3/S-5 Hybrid Alternative would present short-term risks associated with excavation and handling contaminated soils on-site, including air emissions, though the emissions would be less than those associated with Alternative S-5. The S-3/S-5 Hybrid Alternative would also present short-term risks associated with transportation off-site of contaminated soil not suitable for treatment by LTTD, though this risk would be less than the risk presented by Alternative S-3.

Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative would cause an increase in truck traffic, noise and potentially dust in the surrounding community, as well as potential impacts to workers during the performance of the work. These potential impacts would be created through construction activities and exposure to the contaminated soil being excavated and handled. However, proven procedures including engineering controls, personnel protective equipment and safe work practices would be used to address potential impacts to workers and the community.

For example, under Alternatives S-2 through S-4, the work would be scheduled to coincide with normal working hours (e.g., 8 a.m. to 5 p.m. on week days and no work on weekends or holidays). On-site treatment using an LTTD system, as required by Alternative S-5, typically requires 24 hours of operation to achieve maximum efficiency, so use of daily time constraints would reduce the effectiveness of this technology. Operation of an LTTD system immediately adjacent to a residential community would generate noise and some disturbance to the community. Under the S-3/S-5 Hybrid Alternative, the working hours for the excavation and off-site transportation would be scheduled as under Alternative S-2.

Trucking routes with the least disruption to the surrounding community would be utilized. Appropriate transportation safety measures would be required during the shipping of the contaminated soil to the off-site disposal facility.

No short-term environmental impacts would be expected from Alternative S-1. The risk of release during implementation of Alternatives S-2 through S-5 and the S-3/S-5 Hybrid Alternative is principally limited to wind-blown soil transport or surface water runoff. Any potential environmental impacts associated with dust and runoff would be minimized with proper installation and implementation of dust and erosion control measures and by performing the excavation and off-site disposal with appropriate health and safety measures to limit the amount of material that may migrate to a potential receptor.

Alternative S-5 and the S-3/S-5 Hybrid Alternative also present short-term risk because of the potential for exposure associated with treating soils on-site, and because of the potential air emissions from the LTTD system. These risks would be mitigated by engineering controls, use of personal protective equipment, safe work practices and air monitoring. The S-3/S-5 Hybrid Alternative presents less short-term risk than Alternative S-5 as it assumes on-site treatment of a smaller volume of contaminated soil.

The time required for implementation of Alternative S-2 is estimated at 2 years. Alternative S-3 is estimated to take 1 to 2 years. Alternative S-4 is estimated to take 2 to 3 years, and Alternative S-5 is estimated to take about 5 to 7 years to implement. The estimated time required for implementation of the S-3/S-5 Hybrid Alternative is 2 to 3 years. The time frame for Alternative S-4 assumes concurrent implementation of the SVE and solidification treatment technologies; however, the SVE treatment may need to be completed before solidification can be undertaken on portions of the Site, extending the time frame for this alternative to as much as 6 to 8 years. The time frames discussed in this section account for the time to construct each alternative, but not the time required for Remedial Design or other administrative costs, or enforcement-derived delays. Even the remedial alternatives with the shortest implementation time frames are expected to require several years of preparation time before they can be implemented. Alternative S-5 would have the longest construction time frame. Alternative S-5 might also result in preconstruction delays derived from siting and air permitting for an on-site treatment facility. Alternative S-2 and S-3 would have the shortest construction time frames and probably would pose the fewest challenges prior to starting construction. Alternative S-4 would require treatability studies to determine actual construction time frames, adding a level of uncertainty to the time frames developed in the FS, and would also have a longer preconstruction time period than the other alternatives that would not need treatability studies. Although the S-3/S-5 Hybrid Alternative would result in preconstruction delays derived from siting and air permitting for an on-site treatment facility, similar to Alternative S-5, EPA expects that the time required to implement the S-3/S-5 Hybrid Alternative would be 2 to 3 years, minimizing the impact on the community and returning the property to the community for productive use sooner.

EPA expects that any of the remedial alternatives could be implemented in a phased manner that would allow for the initiation of the Borough's redevelopment plan concurrent with the implementation of the remedy. For example, the remedial construction might start with the remediation of the Site at one property line and create remediation areas for a designated developer to then start its work. Under this scenario, the remedial alternatives that rely on capping would integrate the capping requirements with the designated redevelopment infrastructure. Alternatives S-2 and S-3 appear to offer the fewest constraints to this joint remediation/redevelopment approach, and Alternative S-5 the most constraints, including the long remediation time frame and the relatively large foot print of the LTTD unit. Alternative S-4 again has the most uncertainties, including the sequencing of SVE (to treat VOCs) followed by solidification (to treat PCBs), and the volume increases attributable to solidification that might influence the scope of the redevelopment effort.

Buildings

Alternative B-1, the no action alternative, poses no short-term risks to the community.

Alternatives B-2 and B-3 pose short term-term risks based upon the potential for exposure to contaminated building material and transportation of contaminated building debris.

Alternative B-3 would pose the greatest short-term risks, as it would also cause an increase in truck traffic, noise and potentially dust in the surrounding community, as well as potential impacts to workers during the performance of the work. These potential impacts would be created through construction activities and exposure to the contaminated buildings being demolished and handled. However, proven procedures including engineering controls, personnel protective equipment and safe work practices would be used to address potential impacts to workers and the community.

No short-term environmental impacts would be expected from Alternative B-1. The risk of release during implementation of Alternatives B-2 and B-3 is principally limited to wind-blown dust transport and surface water runoff for Alternative B-3. Any potential environmental impacts associated with dust and runoff would be minimized with proper installation and implementation of dust and erosion control measures and by performing decontamination and demolition with appropriate health and safety measures to limit the amount of material that may migrate to a potential receptor.

The time required for implementation of Alternatives B-2 and B-3 is estimated at one to two years. These construction time frames do not take into consideration the time required for remedial design or for relocation of the tenants at the industrial park for Alternatives B-2 and B-3.

6. **Implementability**

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are considered.

Soils

Alternative S-1 requires no implementation.

Alternatives S-2 and S-3 can be implemented using conventional equipment and services that are readily available. The personnel required to operate the heavy equipment would require appropriate Occupational Safety and Health Administration (OSHA) certifications (e.g., hazardous waste worker), in addition to being certified in the operation of heavy equipment. Such individuals are readily available. Off-site hazardous and non-hazardous treatment/disposal facilities for the disposal of the contaminated soils are available, so disposal would be feasible.

Alternative S-4 would require treatability studies, during remedial design, to evaluate how best to implement the SVE system to remove the VOCs, and the solidification of the PCBs. The additional studies would be necessary due to the heterogeneity of the contaminants and debris in the soil. Even after treatability studies to determine the appropriate injection points, solidification agents, dosage rates, and other performance parameters, the technical uncertainties regarding the implementability of Alternative S-4 would still be highest among all the alternatives considered. As discussed under Short-term Effectiveness, Alternative S-4 also poses some uncertainties for the subsequent redevelopment planning, with regard to volume increase of soils (due to solidification) and the potential difficulty of implementing the redevelopment project while the SVE system is operating.

Alternative S-5, operation of an on-site LTTD system adjacent to a residential community, would generate noise and some disturbance to the community. At other sites where EPA has sited temporary treatment units in or near residential communities, the level of community resistance to the project varies. There exist a number of uncertainties associated with Alternative S-5. For cost-estimation purposes, it was assumed that all the soil could be successfully treated using a mobile LTTD unit; however, soil mixed with debris, soil handling concerns and high PCB concentrations that would result in very long residence times are likely to limit the implementability of this treatment method for at least some large fraction of the soil.

The S-3/S-5 Hybrid Alternative also raises some of the concerns of Alternative S-5 related to operation of an on-site LTTD system adjacent to a residential community, but the noise and disturbance to the community would not be as great as a smaller volume of contaminated soil would be treated by the LTTD system. Moreover, by incorporating the off-site disposal of contaminated soils that could not be successfully treated using the on-site LTTD system, this alternative avoids the implementability limitations associated with soil mixed with debris, and soil with high PCB or VOC concentrations. As with Alternative S-3, the personnel required to operate the heavy equipment for the excavation and off-site transportation element of this alternative, and off-site hazardous and non-hazardous treatment/ disposal facilities for the disposal of the contaminated soils, would be readily available.

Buildings

Alternative B-1 requires no implementation.

Alternatives B-2 and B-3 would be easily implemented using conventional construction equipment and materials. Off-site hazardous and non-hazardous treatment/disposal facilities for the disposal of the contaminated building debris are available and disposal would be feasible. Factors associated with relocation affect the implementability of both Alternatives B-2 and B-3.

7. **Cost**

Cost includes estimated capital and operation and maintenance costs, and net present-worth values.

Soils

The cost of Alternative S-1 is $0.

The estimated present worth cost of Alternative S-2 is $114,000,000. This alternative has no operation and maintenance costs.

The estimated present worth cost of Alternative S-3 is $72,000,000, which includes operation and maintenance costs over a 30-year period.

The estimated present worth cost of Alternative S-4 is $36,000,000, which includes annual SVE operating costs for four years and operation and maintenance costs over a 30-year period.

The estimated present worth cost of Alternative S-5 is $52,000,000, which includes annual LTTD operating costs for up to five years and operation and maintenance costs over a 30-year period.

The estimated present worth cost of the S-3/S-5 Hybrid Alternative is $62,000,000, which includes annual LTTD operating costs for up to 3 years and operation and maintenance costs over a 30-year period.

Buildings

The cost of Alternative B-1 is $0.

The estimated present worth cost of Alternative B-2 is $18,000,000, which includes operation and maintenance costs over a 30-year period. Alternative B-3 has an estimated present worth cost of $7,000,000.

Modifying Criteria *- The final two evaluation criteria, criteria 8 and 9, are called "modifying criteria" because new information or comments from the state or the community on the Proposed Plan* *may lead to modification of the preferred response measure or cause another response measure to be considered.*

8. **State Acceptance**
State acceptance indicates whether, based on its review of the RI/FS reports and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with regard to the selected response measure.

The State of New Jersey concurs with the Selected Remedy for the facility soils and buildings.

9. **Community Acceptance**
Community acceptance summarizes the public's general response to the response measures described in the Proposed Plan and the RI/FS reports. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about.

EPA solicited input from the community on the remedial alternatives proposed for OU2 at the Cornell-Dubilier Electronics Site and received extensive oral and written comments. The attached Responsiveness Summary addresses the comments received during the public comment period. The community (residents and business neighbors of the facility) was generally supportive of EPA's Proposed Plan. A group of PRPs submitted comments that questioned the Remediation Goals for PCBs and VOCs in soils identified in the Proposed Plan as too conservative given the likely future property uses, and proposed a modified version of Alternative S-4 as an alternative remedy for OU2. EPA received written and oral comments from the representatives of a local environmental group indicating that the Remediation Goals for PCBs in soil identified in the Proposed Plan may not be adequately protective, and expressing concerns about the current occupancy of the on-site buildings. The Borough of South Plainfield submitted written comments requesting that EPA select the most expeditious and cost-effective remedy that would expedite redevelopment of the facility property, thereby supporting the PRPs' alternative remediation plan. In contrast, the Borough's Environmental Commission submitted written comments supporting EPA's Proposed Plan.

PRINCIPAL THREAT WASTE

EPA's findings to date indicate the presence of "principal threat" wastes at the former CDE facility property. Principal threat wastes are considered source materials, i.e., materials that include or contain hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

By utilizing treatment as a significant portion of the soil remedy, the statutory preference for remedies that employ treatment as a principal element is satisfied.

SELECTED REMEDY

Based upon consideration of the results of the Site investigations, the requirements of CERCLA, the detailed analysis of the response measures, and public comments, EPA has determined that a combination of Alternative S-3 and Alternative S-5 is the appropriate remedy for contaminated soils at the Site. Furthermore, Alternative B-3 is the appropriate remedy for contaminated buildings at the Site. These remedies best satisfy the requirements of CERCLA Section 121 and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR § 300.430(e)(9). These remedies are comprised of the following components:

Soils

- excavation of an estimated 107,000 cubic yards of contaminated soil containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's IGWSCC for contaminants other than PCBs;
- on-site treatment of excavated soil amenable to treatment by LTTD, followed by backfilling of excavated areas with treated soils;
- transportation of contaminated soil and debris not suitable for on-site LTTD treatment to an off-site facility for disposal, with treatment as necessary;
- excavation of an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas and transportation for disposal off site, with treatment as necessary;
- installation of a multi-layer cap or hardscape;
- installation of engineering controls;

- property restoration; and
- implementation of institutional controls.

EPA concluded that neither Alternative S-3 nor Alternative S-5 alone would provide sufficient flexibility during the remedial action to address this very complex Site, but that a combination of the two alternatives would be successful. For example, the FS assumed that 100 percent of the soils to be excavated under Alternative S-5 could be successfully treated using LTTD, whereas several factors are likely to make treatment of a large quantity of soil impracticable. These factors include soils handling issues related to levels of debris found in the soil, the high PCB concentrations that may require very long residence times or repeated passes through the LTTD unit, and the high VOC concentrations in some soils that may result in vapor releases during soils handling in preparation for the LTTD unit. Where these factors occur, Alternative S-3 (off-site disposal) would be more appropriate. EPA anticipates that soils treated by the on-site LTTD will achieve a treatment goal of 10 ppm for PCBs prior to being backfilled on-site.

As noted in the comparative analysis of alternatives, in the Short-Term Effectiveness section, EPA expects that the Selected Remedy for soils would be performed in 2 to 3 years, closer to the time frame for Alternative S-3. The hybrid Alternative S-3/S-5 remedy assumes that approximately 50 percent of the 107,000 yards of contaminated soil identified in the FS would be amenable for treatment on site and the remainder would be addressed through off-site disposal.

Because the Borough of South Plainfield's redevelopment plans anticipate commercial reuse of the property, EPA considered the potential for vapor intrusion of VOCs from residual contamination. EPA concluded that vapor intrusion may pose a human health concern under various future-use scenarios. While the Selected Remedy would be expected to substantially reduce the potential for vapor intrusion, vapor mitigation systems would need to be evaluated for any buildings to be built in the future.

The Selected Remedy requires contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs to be capped through the use of a multi-layer cap. Hardscape (i.e., that part of the site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. NJDEP has indicated that soils containing PCBs greater than New Jersey's non-residential direct contact soil cleanup criterion of 2 ppm would be subject to engineering controls.

Subsurface areas in the southeastern portion of the Site may contain former land surfaces and associated cultural resources that relate to pre-historic and/or early historic time periods. Therefore, the Selected Remedy may expose or disturb archeological/cultural resources that may be eligible for the NRHP. If subsurface archeological sites are discovered within the facility property and determined to be eligible for the NRHP under Criterion D (properties that have yielded or may be likely to yield information important in prehistory or history), and if the project would affect these significant properties, then it would be necessary to develop an approach to resolve or mitigate the effects of the remedial action, such as data recovery.

Buildings

- demolition of the 18 on-site buildings;
- transportation of the building debris off-site for disposal, with treatment as necessary; and
- relocation of the eligible tenants at the industrial park pursuant to the Uniform Relocation Act, as necessary.

Although certain buildings will have to be demolished as part of the selected soil remedy, and the expected redevelopment of the industrial park anticipates demolition of all the existing structures, it is possible that not all of the structures will have to be demolished for those two reasons. Therefore, the Selected Remedy for the buildings includes a contingency remedy that would allow for the decontamination and surface encapsulation of certain buildings that may not need to be demolished for the reasons cited above. The implementation of the contingency remedy for certain buildings that do not need to be demolished would achieve the Remedial Action Objectives, while allowing the property owner(s) and/or the parties performing the work to determine the ultimate fate of the buildings. The contingency remedy would require institutional controls to be employed to ensure that any future Site activities are performed with knowledge of the Site conditions and with implementation of appropriate health and safety controls, and that the buildings would not be used for any purposes inconsistent with the continued presence of PCBs within the building materials.

Some of the structures at the industrial park have the potential to qualify as historic properties because of the activities of the Spicer Manufacturing Corporation. As a result, further investigation must be performed. Since the Selected Remedy would affect the structures, if the on-site structures qualify as historic properties, it would be necessary to develop an approach to mitigate the effects of the remedial action. It is expected that such an approach would involve performing additional historical research and recordation of the structures.

During the remedial design, decontamination prior to demolition could be considered to reduce the quantity of hazardous waste. Non-contaminated building debris could be recycled and could be reused on-site.

The estimated present worth cost of EPA's Selected Remedy for soils is $62 million. This estimate assumes 50 percent of the 107,000 cubic yards of soil will be addressed through LTTD and placed back on the Site, and the remainder will be sent off-site for disposal. Even if only a limited quantity of soils can be treated using LTTD, this S-3/S-5 hybrid also satisfies another of EPA's mandates under the Superfund program, to treat principal threat wastes to the maximum extent practicable. The estimated present worth cost of EPA's Selected Remedy for buildings is $7,000,000. A summary of the estimated remedy costs is included in Appendix II, Tables 9 and 10. The information in the cost estimate summary tables is based on the best available information regarding the anticipated scope of the Selected Remedy. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the Selected Remedy. Major changes may be documented in the form of a memorandum in the Administrative Record file, an Explanation of Significant Differences, or a ROD amendment.

The combination of Alternatives S-3 and S-5, and Alternative B-3 is believed to provide the best balance of trade-offs among the alternatives with respect to the evaluation criteria. EPA and NJDEP believe the Selected Remedy will be protective of human health and the environment, will comply with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, will be cost-effective, and will utilize permanent solutions and treatment technologies to the maximum extent practicable. Even if only a limited quantity of contaminated soils can be treated using LTTD, the hybrid soil alternative would also meet the statutory preference for the use of remedies that employ treatment that reduce toxicity, mobility or volume as a principal element.

STATUTORY DETERMINATIONS

As was previously noted, CERCLA Section 121(b)(1) mandates that a remedial action must be protective of human health and the environment, must be cost-effective, and must utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. CERCLA Section 121(b)(1) also establishes a preference for remedial actions that employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA Section 121(d) further specifies that a remedial action must satisfy ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4). For the reasons discussed below, EPA has determined that the Selected Remedy meets the requirements of CERCLA Section 121.

Protection of Human Health and the Environment

Soils

The Selected Remedy, the combination of Alternatives S-3 and S-5, will adequately protect human health and the environment by eliminating all significant direct-contact risks to human health and the environment associated with contaminated soil. In addition, this action will eliminate and/or reduce sources of contamination to the groundwater. This action will result in the reduction of exposure levels to acceptable risk levels within EPA's generally acceptable risk range of 10^{-4} to 10^{-6} for carcinogens and below a HI of 1 for noncarcinogens. Implementation of the Selected Remedy will not pose unacceptable short-term risks or adverse cross-media impacts.

Buildings

The Selected Remedy, Alternative B-3, will prevent human exposure to building contaminants and will prevent the migration of contamination sources to the environment through off-site disposal of the contaminated building materials.

Compliance with ARARs

At the completion of the response action for the contaminated soils and buildings, the Selected Remedy will meet the standards of all applicable ARARs, including:

Action-Specific ARARs:

Compliance with action-specific ARARs will be achieved by conducting all remedial action activities in accordance with the following:

- TSCA - Requirements codified at 40 CFR § 761.30(p) set standards regarding the use of PCB contaminated surfaces.
- TSCA - Requirements codified at 40 CFR § 761.61 provide a risk-based approach for managing PCB wastes.

- TSCA - Requirements codified at 40 CFR § 761.65 govern storage for disposal of PCB waste with concentrations of 50 ppm or greater.

- TSCA - Requirements codified at 40 CFR § 761.79 set decontamination standards for equipment and personal protective equipment.

- RCRA - Requirements codified at 40 CFR Part 262 govern packaging, labeling, manifesting and storage of hazardous waste.

- RCRA - Requirements codified at 40 CFR Part 263 govern off-site transport of hazardous waste.

- RCRA - Requirements codified at 40 CFR Part 264 govern on-site storage of hazardous waste.

- RCRA - Land Disposal Restrictions. Land disposal restrictions (LDRs), codified at 40 CFR Part 268, prohibit land disposal of soils exhibiting the toxicity characteristic because of the presence of metals and containing PCBs, unless total PCBs are less than 1,000 ppm and the soils meet specified treatment standards.

- Hazardous Materials Transportation Law, 49 U.S.C. § 5101 et seq. - Hazardous wastes that are transported off-site must meet Department of Transportation regulations set forth in 49 CFR Parts 105, 107, 171-178.

- Clean Water Act (CWA) - Section 402 of the CWA, 33 U.S.C. § 1342, and its regulations codified at 40 CFR Part 122, govern discharge of stormwater from construction sites of more than one acre.

- National Ambient Air Quality Standards for Hazardous Air Pollutants, codified at 40 CFR Part 50, establish maximum concentrations for fugitive dust emissions and particulates.

- New Jersey Hazardous Waste Management Regulations - Requirements codified at N.J.A.C. 7:26G establish standards for generation, accumulation, on-site management, and transportation of hazardous wastes.

- NJDEP Technical Requirements for Site Remediation - These requirements, codified at N.J.A.C. 7:26E, specify technical standards to be followed at sites undergoing remediation pursuant to New Jersey remediation programs.

- New Jersey Air Quality Regulations - Requirements codified at N.J.A.C. 7:27 are applicable to the generation and emission of air pollutants.

- National Historic Preservation Act - Pursuant to Section 106 of the National Historic Preservation Act, potentially significant cultural resources at the Site must be identified.

Chemical-Specific ARARs:

- None applicable.

Location-Specific ARARs:

- National Historic Preservation Act - Pursuant to Section 106 of the National Historic Preservation Act, potentially significant cultural resources at the Site must be identified.

- Executive Order 11988, "Floodplain Management" - Requires the consideration of impacts to floodplains in order to avoid adversely impacting floodplains wherever possible and to ensure the restoration and preservation of such land areas as natural undeveloped floodplains.

- Executive Order 11990, "Protection of Wetlands" - Requires consideration of impacts to wetlands in order to minimize destruction, loss or degradation and to preserve and enhance wetland values.

- "Freshwater Wetlands Protection Act Rules" - New Jersey requirements codified at N.J.A.C. 7:7A, regulate the disturbance or alteration of freshwater wetlands and their buffers.

<u>To Be Considered Material (TBCs)</u>. The following requirements will be considered by EPA during design and implementation of the Selected Remedy, and will be complied with the extent practicable.

- EPA's 1985 Statement of "Policy on Floodplains and Wetlands Assessments for CERCLA Action".

- NJDEP Guidance for Remediation of Contaminated Soils. NJDEP has developed a non-residential direct contact soil cleanup criterion of 2 ppm for PCB-contaminated soil.

- NJDEP standards for soil erosion and sediment control, N.J.A.C. 2:90-1.1, describes the recommended approach and standards to be used for soil erosion and sediment control plans.

Other Pertinent Requirements

- Occupational Safety and Health Act (OSHA) - Occupational Safety and Health Standards for Hazardous Response and General Construction Activities (29 CFR Parts 1904, 1910, 1926) are intended to protect workers from harm related to occupational exposure to chemical contaminants, physical hazards, heat or cold stresses, noise, etc. OSHA is considered to be a "non-environmental law" whose standards and requirements apply of their own force, not as a result of the CERCLA ARAR system (55 FR 8680, March 8, 1990). For this reason, remediation activities at the Site will be subject to the requirements of OSHA.

- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. 4601 et seq., and its implementing regulations at 49 CFR Part 24 governs agency conduct of relocation of persons displaced from their homes, businesses or forms by federal and federally-assisted programs.

- EPA guidance document, "Superfund Response Actions: Temporary Relocations Implementation Guidance" provides guidance to EPA concerning implementation of relocation activities when necessary.

A comprehensive list of ARARs and TBCs (e.g., advisories, criteria, and guidance) is provided in the Final Feasibility Study Report for OU2, Table 2-2 through Table 2-4.

Cost-Effectiveness

Soils

In EPA's judgment, the Selected Remedy is cost-effective and represents reasonable value for the money to be spent. Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The overall effectiveness of the Selected Remedy has been determined to be proportional to the costs, and the Selected Remedy therefore represents reasonable value for the money to be spent.

The estimated present worth of the selected soil remedy for OU2 is $62 million. This estimate assumes 50 percent of the 107,000 cubic yards of soil will be addressed through LTTD and placed back on-site, and the remainder will be sent off-site for disposal. In contrast, the estimated present worth of Alternative S-3 is $72 million. The Selected Remedy thus is less expensive and provides the same level of protection of human health and the environment as Alternative S-3.

EPA considered the cost-effectiveness of Alternative S-4 when compared to the hybrid Alternative S-3/S-5, and evaluated several factors. EPA concluded that the hybrid Alternative S-3/S-5, when compared with Alternative S-4, offered a much higher degree of long-term effectiveness and permanence, and a better return on the investment of treating soils to address principal threats (given the permanence of ex-situ LTTD treatment versus the uncertainties of in-situ SVE and the long-term reliability of PCB solidification. EPA also concluded that the short-term effectiveness of the hybrid Alternative S-3/S-5 is superior to Alternative S-4 when considering the Borough's redevelopment plans. Contaminated soils treated using LTTD would yield soils suitable for backfilling of excavated areas and allow for the redevelopment of the property. Alternative S-4 poses several uncertainties to the redevelopment with regard to the viability of SVE and solidification on debris-ladened soil, the time frame for implementation of SVE and solidification, and the consequences of volume expansion of the solidified mass for the future-use site plan. While some of these uncertainties may be clarified through treatability studies, EPA concluded that over all, the cost-effectiveness of the Selected Remedy was greater than that of Alternative S-4.

Buildings

The estimated present worth of the selected building remedy is $7,000,000, whereas the estimated present worth of Alternative B-2 is $18,000,000. Alternative B-3 thus is both less expensive and significantly more protective of human health and the environment than Alternative B-2, necessarily making it the most cost-effective alternative.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the Selected Remedy provides the best balance of trade-offs among the alternatives with respect to the five balancing criteria.

Soils

The selected soil remedy would reduce long-term risks, since highly contaminated soils (principal threat wastes) would be removed. The Selected Remedy relies on engineering and institutional controls to reduce future health risks to property owners/occupants from exposure to contaminated soils.

The Selected Remedy is implementable since it employs a combination of technologies that are readily available and allows flexibility in the remedial action. Site specific conditions, such as soil mixed with debris, soil handling concerns and high PCB concentrations may limit the implementability of the on-site LTTD. Where these conditions occur, for example, off-site disposal of principal threat wastes would be more appropriate. Because these conditions would also limit the viability of off-site thermal treatment, EPA is using off-site disposal as the alternative to on-site LTTD.

In contrast, because of the heterogeneity of the contaminants and debris in the soil, Alternative S-4 would require treatability studies during remedial design, evaluating how to best implement the SVE system to remove the VOCs, and the solidification of the PCBs. Even after treatability studies to determine the appropriate injection points, solidification agents, dosage rates, and other performance parameters, the uncertainties regarding the implementability of Alternative S-4 would still be the highest among all the alternatives considered.

Buildings

The selected building remedy satisfies the criteria for long-term effectiveness and permanence by removing the contaminated buildings from the Site. The Selected Remedy presents a higher short-term risk than Alternative B-2 because of the greater potential for exposure associated with demolition and transportation of contaminated building debris. However, these short-term risks will be mitigated through implementation of measures such as engineering controls, use of personal protective equipment, safe work practices and perimeter air monitoring. There are no special implementability issues since the remedy employs standard technologies.

Preference for Treatment as a Principal Element

By utilizing on-site LTTD treatment to the extent practicable, the statutory preference for remedies that employ treatment as a principal element is satisfied.

Five-Year Review Requirements

Because the soil remedy will result in hazardous substances, pollutants, or contaminants remaining at the industrial park above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the remedial actions to ensure that the remedies are, or will be, protective of human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Cornell-Dubilier Electronics, Inc. Site was released for public comment on July 6, 2004. The comment period closed on September 4, 2004.

All written and verbal comments submitted during the public comment period were reviewed by EPA. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

<u>APPENDIX I</u>

FIGURES

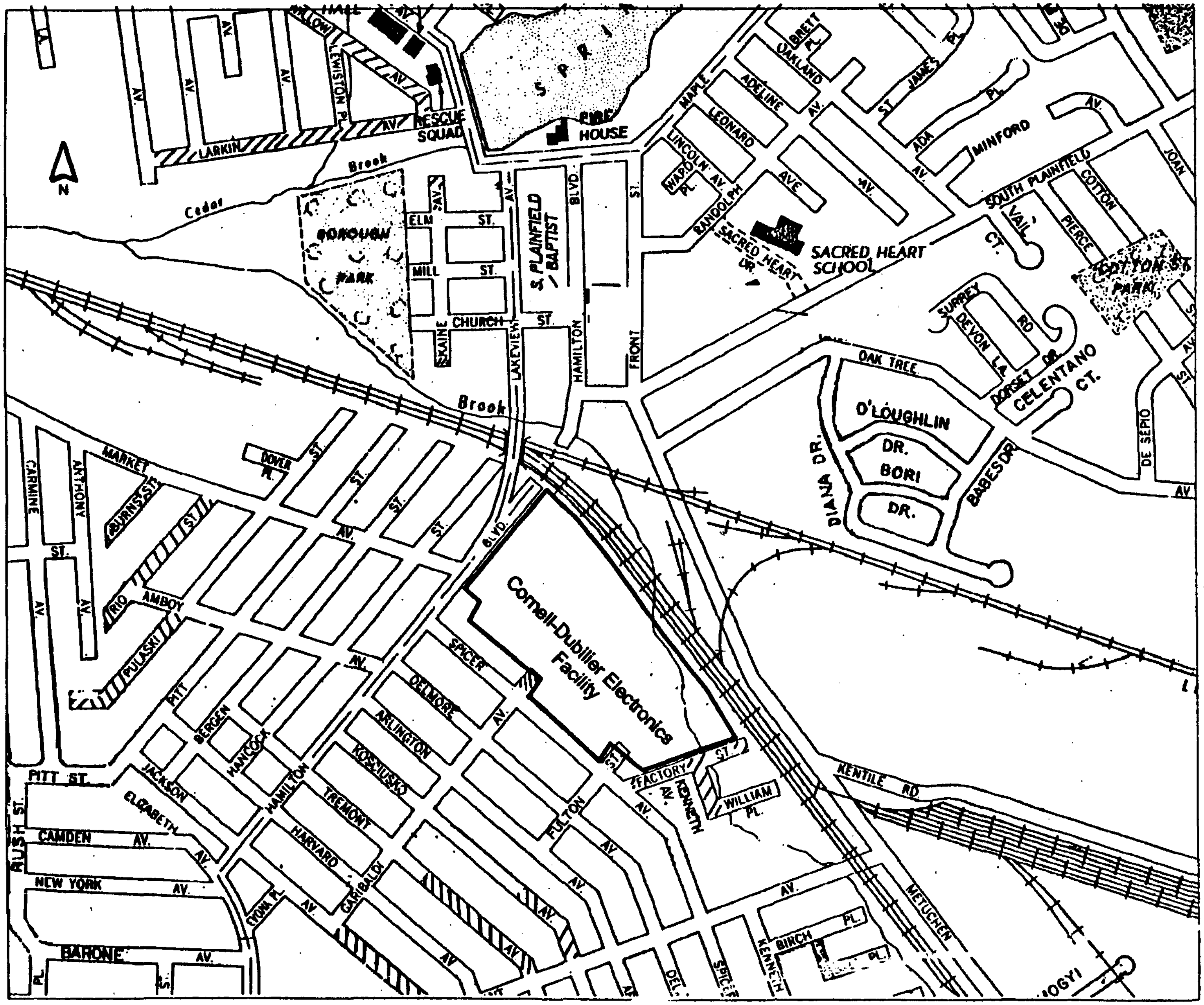

Figure 1
Cornell-Dubilier Electronics Superfund site
Site Location Map

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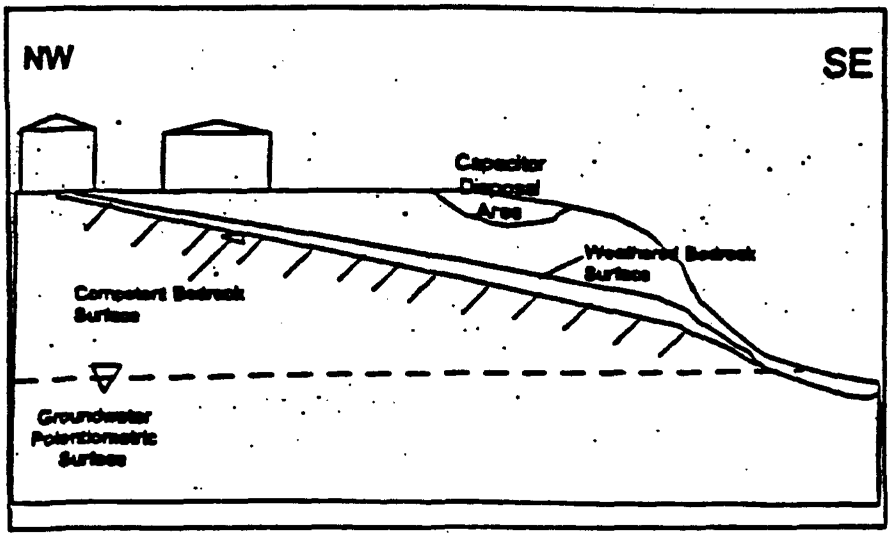

Figure 2
Cross Section of Hamilton Industrial Park

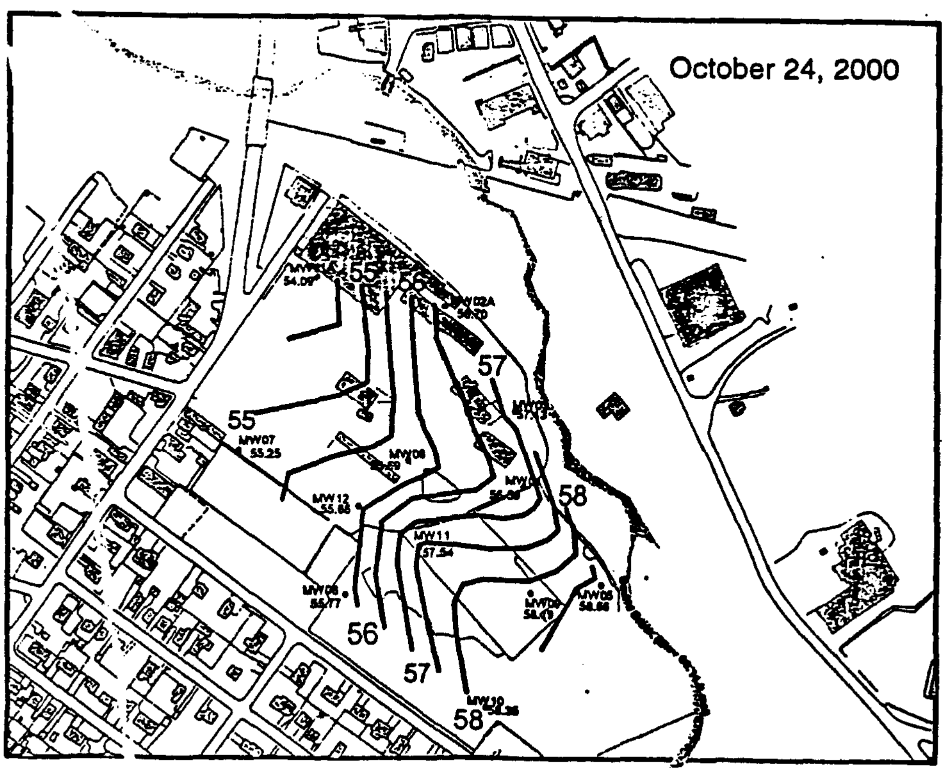

Figure 3
Bedrock Aquifer Potentiometric Surfaces

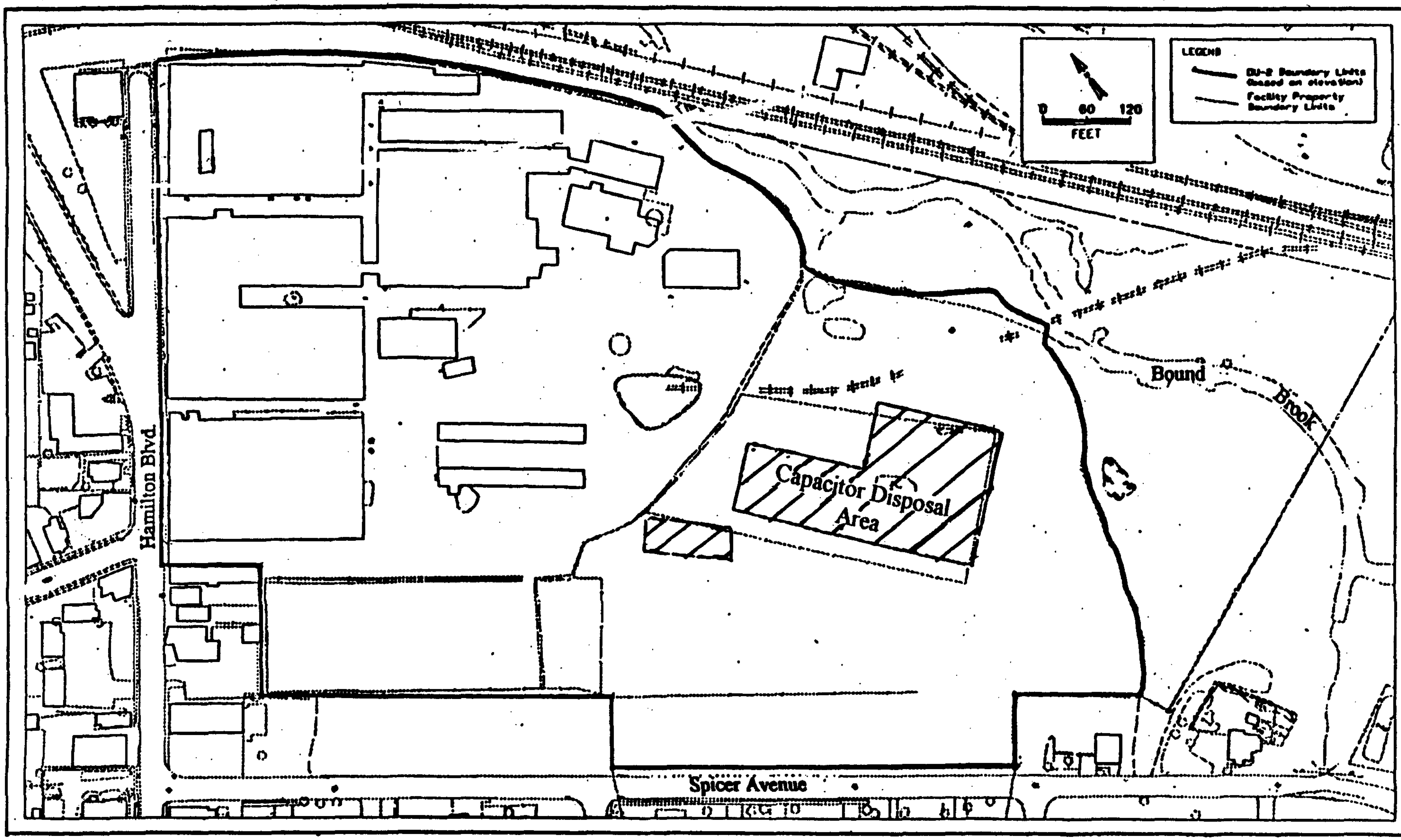

Figure 4
Cornell-Dubilier Electronics Superfund Site
Operable Unit 2 - Facility Soils and Buildings

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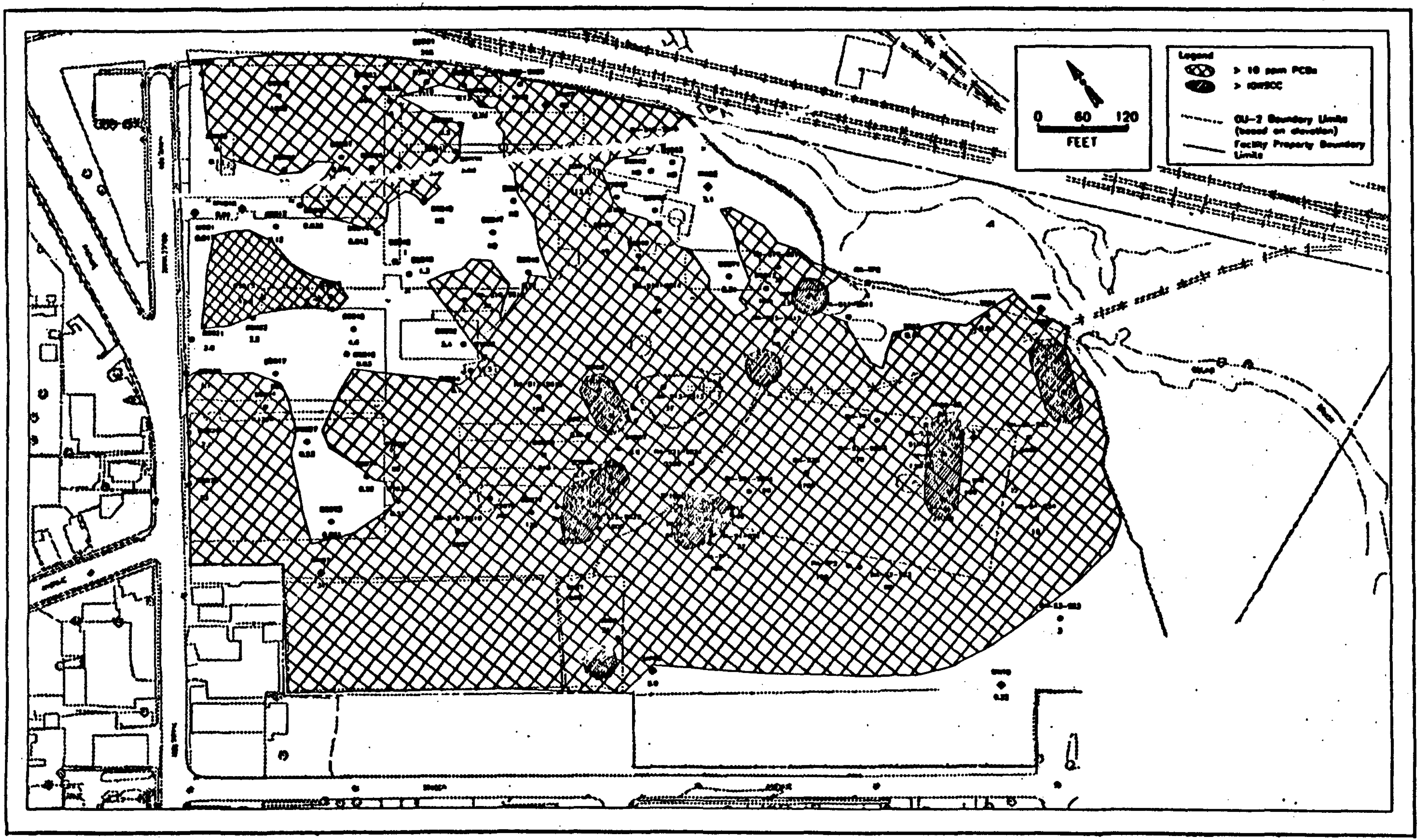

Figure 5
Cornell-Dubilier Electronics Superfund site - Operable Unit 2
Extent of PCB contamination greater than 10 ppm and other COPCs greater than IGWSCC

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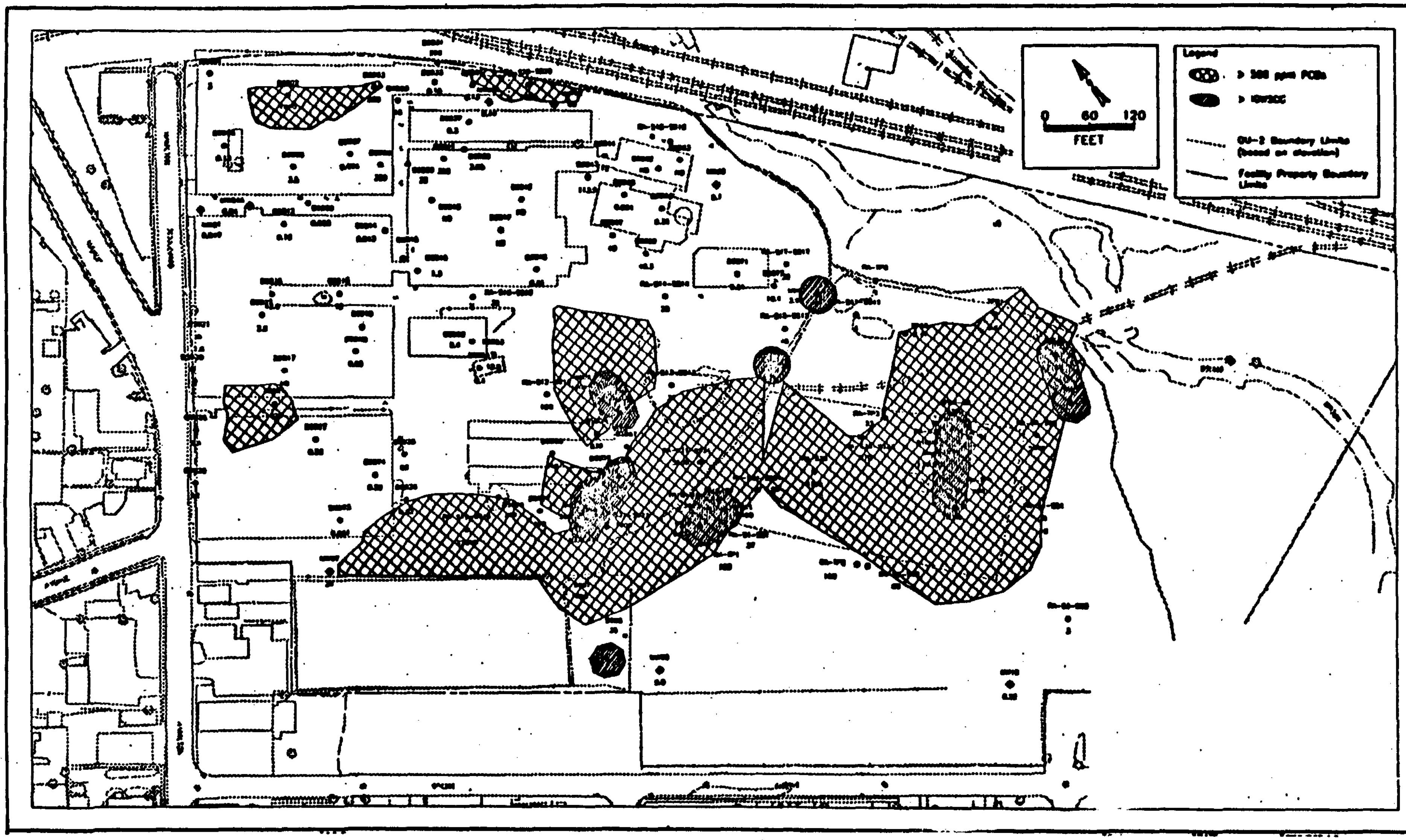

Figure 6
Cornell-Dubilier Electronics Superfund site - Operable Unit 2
Extent of PCB contamination greater than 500 ppm and other COPCs greater than IGWSCC

APPENDIX II

TABLES

TABLE 1
Summary of Chemicals of Concern and
Medium-Specific Exposure Point Concentrations (EPCs)

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	EPC	EPC Units	Statistical Measure
		Min	Max					
Area A	Aldrin	1.5e-02	9.2e+00	ppm	4/5	9.2e+00	ppm	MAX
	Arsenic	1.6e+01	9.2e+01	ppm	5/5	9.2e+01	ppm	MAX
	Benzo(a)anthracene	5.5e-02	3.1e+00	ppm	5/5	3.1e+00	ppm	MAX
	Benzo(a)pyrene	7.0e-02	2.8e+00	ppm	5/5	2.8e+00	ppm	MAX
	Benzo(b)fluoranthene	7.9e-02	4.0e+00	ppm	5/5	4.0e+00	ppm	MAX
	Dibenz(a,h)anthracene	9.6e-02	4.9e-01	ppm	4/5	4.9e-01	ppm	MAX
	Aroclor 1254	7.9e-01	3.4e+02	ppm	5/5	3.4e+02	ppm	MAX
	Total PCBs	9.2e-01	3.5e+02	ppm	5/5	3.5e+02	ppm	MAX

TABLE 1 Continued

Scenario Timeframe: Current   Medium: Surface Soil   Exposure Medium: Surface Soil

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	EPC	Units	Statistical Measure
		Min	Max					
Area B with outliers	Benzo(a)anthracene	8.0e-02	9.2e+02	ppm	9/12	4.1e+02	ppm	95% Chebyshev
						2.7e+00	ppm	MAX
without outliers (presented on second line for each individual chemical)	Benzo(a)pyrene	9.0e-02	5.2e+02	ppm	9/12	2.3e+02	ppm	95% Chebyshev
						2.8e+00	ppm	MAX
	Benzo(b)fluoranthene	4.3e-02	4.5e+02	ppm	10/12	6.8e+01	ppm	99% Chebyshev (MVUE)
						3.3e+00	ppm	MAX
	Benzo(k)fluoranthene	9.4e-02	4.5e+02	ppm	9/12	2.0e+02	ppm	95% Chebyshev
						2.7e+00	ppm	95% Chebyshev MVUE
	Chrysene	1.2e-01	8.3e+02	ppm	9/12	3.7e+02	ppm	95% Chebyshev
						3.4e+00	ppm	95% Chebyshev MVUE
	Dibenza(a,h)anthracene	7.9e-02	6.6e+01	ppm	7/12	3.0e+01	ppm	95% Chebyshev
						6.1e-01	ppm	95% H- UCL
	Indeno(1,2,3-cd)pyrene	8.4e-02	2.6e+02	ppm	9/12	1.2e+02	ppm	95% Chebyshev
						2.3e+00	ppm	95% Chebyshev MVUE
	2,3,7,8-TCDD	3.0e-05	8.4e-03	ppm	3/3	8.0e-03	ppm	MAX
						8.0e-03	ppm	MAX
	4,4'-DDE	7.8e-03	1.2e+03	ppm	7/12	5.4e+02	ppm	Chebyshev - Investigate
						1.4e+01	ppm	Chebyshev - Investigate
	4,4'-DDT	4.2e+01	4.2e+01	ppm	1/12	2.0e+01	ppm	Chebyshev - Investigate
						8.0e-01	ppm	MAX
	alpha-BHC	3.6e-03	2.4e+00	ppm	3/12	2.4e+00	ppm	MAX
						7.5e-02	ppm	MAX
	Aroclor 1254	4.3e-01	1.9e+04	ppm	11/12	8.7e+03	ppm	Chebyshev - Investigate
						5.4e+02	ppm	Chebyshev - Investigate
	Dieldrin	3.7e-01	1.8e+02	ppm	4/11	9.1e+01	ppm	Chebyshev - Investigate
						1.7e+01	ppm	Chebyshev - Investigate
	gamma-Chlordane	3.2e-01	2.0e+01	ppm	2/11	1.0e+01	ppm	Chebyshev - Investigate
						3.2e-01	ppm	MAX
	Heptachlor	1.9e+00	1.9e+00	ppm	1/12	1.9e+00	ppm	MAX
						4.1e-01	ppm	MAX
	Heptachlor epoxide	1.9e-01	2.5e+02	ppm	5/11	1.2e+02	ppm	Chebyshev - Investigate
						6.7e+00	ppm	95% UCL
	Dioxin-like PCBs	1.1e-04	3.8e+00	ppm	5/5	3.8e+00	ppm	MAX
						3.8e+00	ppm	MAX
	Nondioxin-like PCBs	3.3e-01	3.2e+04	ppm	5/5	3.2e+04	ppm	MAX
						3.2e+04	ppm	MAX
	Total PCBs	3.5e-01	2.0e+04	ppm	12/12	9.0e+03	ppm	95% Chebyshev
						9.3e+02	ppm	MAX
	Trichloroethylene	2.0e-03	1.3e+00	ppm	6/12	5.6e-01	ppm	99% Chevyshev
						9.0e-02	ppm	95% Chebyshev (MVUE)
	Arsenic	3.4e+00	3.8e+01	ppm	12/12	3.2e+01	ppm	95% H-UCL
						3.2e+01	ppm	95% H-UCL

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TABLE 1 continued

Scenario Timeframe: Current/Future Medium: Building Dust Exposure Medium: Building Dust

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	EPC	Units	Statistical Measure
		Min	Max					
Building Interior	Aroclor 1254	4.9e+00	8.3e+03	ppm	32/32	2.1e+03	ppm	95% UCL-T
	Arsenic	2.6e+00	9.4e+01	ppm	32/32	1.9e+01	ppm	95% UCL-T

Scenario Timeframe: Future Medium: Site Soil Exposure Medium: All Soils

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	EPC	Units	Statistical Measure
		Min	Max					
Area A with outliers	Benzo(a)pyrene	4.3e-02	1.4e+01	ppm	45/100	1.3e+00	ppm	95% Chevyshev
without outliers (presented on second line for each individual chemical)						8.5e-01	ppm	95% Chevyshev
	Dibenz(a,h)anthracene	4.2e-02	2.1e+00	ppm	22/100	5.3e-01	ppm	95% Chevyshev
						5.3e-01	ppm	95% Chevyshev
	Aldrin	2.2e-03	2.7e+01	ppm	39/87	2.4e+00	ppm	95% Chevyshev
						1.3e+00	ppm	95% Chevyshev
	Aroclor 1248	2.8e-02	1.1e+03	ppm	8/99	6.3e+01	ppm	95% Chevyshev
						1.1e+01	ppm	95% Chevyshev
	Aroclor 1254	1.5e-04	1.0e+03	ppm	88/97	1.1e+02	ppm	95% Chevyshev
						8.0e+01	ppm	95% Chevyshev
	Dieldrin	3.4e-03	4.3e+01	ppm	22/94	2.9e+00	ppm	95% Chevyshev
						2.6e-01	ppm	95% Chevyshev
	Heptachlor	7.3e-03	3.2e+01	ppm	9/99	1.8e+00	ppm	95% Chevyshev
						1.2e-01	ppm	95% Chevyshev
	Heptachlor epoxide	5.4e-03	7.3e+00	ppm	13/84	9.1e-01	ppm	95% Chevyshev
						9.1e-01	ppm	95% Chevyshev
	Total PCBs	1.4e-01	1.3e+03	ppm	99/99	1.5e+02	ppm	95% Chevyshev
						1.2e+02	ppm	95% Chevyshev
	Arsenic	6.0e-01	9.2e+01	ppm	96/101	2.1e+01	ppm	95% Chevyshev
						2.1e+01	ppm	95% Chevyshev

TABLE 1 Continued

Scenario Timeframe: Future   Medium: Site Soils   Exposure Medium: All Soils

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	EPC	Units	Statistical Measure
		Min	Max					
Area B with outliers Without outliers (presented on second line for each individual chemical)	Trichloroethylene	1.0e-03	4.7e+01	ppm	36/55	8.4e+00	ppm	95% Chebyshev
						2.0e+00	ppm	95% Chebyshev
	Benzo(a)anthracene	4.1e-02	9.2e+02	ppm	29/55	1.1e+02	ppm	95% Chebyshev
						2.2e+00	ppm	95% Chebyshev
	Benzo(a)pyrene	4.2e-02	5.2e+02	ppm	29/55	8.4e+01	ppm	95% Chebyshev
						2.1e+00	ppm	95% UCL
	Benzo(b)fluoranthene	4.3e-02	4.6e+02	ppm	30/55	2.8e+01	ppm	99% Chevyshev MVUE
						3.4e+00	ppm	95% Chebyshev
	Benzo(k)fluoranthene	5.8e-02	4.5e+02	ppm	28/55	6.3e+01	ppm	95% Chebyshev
						2.4e+00	ppm	95% Chebyshev
	Dibenz(a,h)anthracene	4.1e-02	7.5e+01	ppm	20/55	1.4e+01	ppm	95% Chebyshev
						1.8e+00	ppm	MAX
	Indeno(1,2,3-cd)pyrene	8.4e-02	2.6e+02	ppm	25/55	3.5e+01	ppm	95% Chebyshev
						1.9e+00	ppm	95% Chebyshev
	2,3,7,8-TCDD	3.0e-05	8.0e-03	ppm	3/3	–	ppm	MAX
						8.0e-04	ppm	MAX
	4,4'-DDE	4.4e-04	9.7e+03	ppm	25/52	1.0e+03	ppm	Chebyshev - Investigate
						2.1e+01	ppm	95% Chebyshev
	4,4'-DDT	7.4e-03	2.5e+04	ppm	7/53	2.5e+03	ppm	95% Chebyshev
						9.7e-01	ppm	95% Chebyshev
	Aldrin	6.4e-03	1.1e+03	ppm	16/52	1.2e+02	ppm	95% Chebyshev
						1.7e+01	ppm	95% Chebyshev
	alpha-BHC	2.0e-03	3.0e+00	ppm	9/52	3.0e+00	ppm	MAX
						9.1e-01	ppm	95% Chebyshev
	Aroclor 1242	9.0e-01	5.6e+03	ppm	8/52	8.1e+02	ppm	95% Chebyshev
						2.9e+01	ppm	95% Chebyshev

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TABLE 1 Continued

Scenario Timeframe: Future   Medium: Site Soils   Exposure Medium: All Soils

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	EPC	Units	Statistical Measure
Area B with outliers continued	Aroclor 1248	9.8e-02	2.9e+04	ppm	15/53	3.1e+03	ppm	95% Chebyshev
Without outliers (presented on second line for each individual chemical)						4.5e+02	ppm	95% Chebyshev
	Aroclor 1254	1.7e-02	1.3e+05	ppm	48/54	1.4e+04	ppm	Chebyshev - Investigate
						1.8e+03	ppm	Chebyshev - Investigate
	Dieldrin	3.2e-04	1.0e+04	ppm	18/48	1.3e+03	ppm	95% Chebyshev
						3.1e+01	ppm	95% Chebyshev
	Endrin aldehyde	2.9e-04	1.7e+03	ppm	23/51	1.8e+02	ppm	95% Chebyshev
						4.0e+00	ppm	95% Chebyshev
	gamma-Chlordane	1.1e-01	8.2e+03	ppm	5/36	1.2e+03	ppm	95% Chebyshev
						3.2e-01	ppm	MAX
	Heptachlor	2.1e-03	3.0e+01	ppm	8/52	7.3e+00	ppm	95% Chebyshev
						5.4e-01	ppm	95% Chebyshev
	Heptachlor epoxide	6.3e-03	1.2e+03	ppm	19/49	1.4e+02	ppm	95% Chebyshev
						4.1e+00	ppm	95% Chebyshev
	Dioxin-like PCBs	1.1e-04	3.8e+00	ppm	5/5	–	ppm	MAX
						3.8e+00	ppm	MAX
	Nondioxin-like PCBs	3.3e-01	3.2e+04	ppm	5/5	–	ppm	MAX
						3.2e+04	ppm	MAX
	Total PCBs	1.5e-01	1.4e+05	ppm	55/55	1.6e+04	ppm	95% Chebyshev
						2.2e+03	ppm	95% Chebyshev
	Arsenic	7.7e-01	1.1e+03	ppm	55/55	4.6e+01	ppm	95% H-UCL
						2.5e+01	ppm	95% H-UCL

The tables present the chemicals of concern (COCs) and exposure point concentration for each of the COCs detected inside the buildings and in surface and subsurface soils (*i.e.*, the concentrations that was used to estimate the exposure and risk from each COC in each media). The tables include the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the exposure point concentration (EPC), and how the EPC was derived. Because of the small number of samples, the maximum detected concentration was used as the EPC for some of the samples. Based on the statistical distribution of contaminants found at the site, Region II contacted ORD's Statistical Technical Support Center in Las Vegas for assistance in evaluating the EPCs for these chemicals. Based on the Support Center's analysis, it was determined that outliers were present. Therefore, where outliers were identified the EPCs are presented with outliers and without outliers. Based on the recommendations from the Support Center and their analysis of the data, the EPCs were calculated using the 95% UCL, the 95% H-UCL, the 95% and 99% Chebyshev, and Chebyshev-Investigate, where appropriate. The recommendations are outlined in the memo from the Support Center for EPA which is provided as Appendix I to the HHRA in the RI. Pro-UCL Version 2 was used in the calculation of the EPCs.
ppm is equivalent to mg/kg

TABLE 2

Conceptual Site Model - Selection of Exposure Pathways

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Onsite/ Offsite	Rationale for Selection/Exclusion of Exposure Pathway
Current	Surface Soil	Surface Soil	Surface Soil Both Area A and Area B	Trespasser	Youth	Dermal	On-site	Evidence of trespasser activity on-site.
						Ingestion	On-site	Evidence of trespasser activity on-site.
						Inhalation of particulates	On-site	Evidence of trespasser activity on-site.
						Inhalation of volatiles	On-site	Evidence of trespasser activity on-site.
				Site Worker (outdoor)	Adult	Dermal	On-site	Current and likely future land use is industrial.
						Ingestion	On-site	Current and likely future land use is industrial.
						Inhalation of particulates	On-site	Current and likely future land use is industrial.
						Inhalation of volatiles	On-site	Current and likely future land use is industrial.
Current/Future	Building Dust	Building Dust	Building Interior	Site Worker (indoor)	Adult	Ingestion	On-site	Current and likely future land use is industrial.
						Dermal	On-site	Current and likely future land use is industrial.
	Site Soils	Air	Indoor Air Both Area A and Area B	Site Worker (indoor)	Adult	Inhalation of volatiles	On-site	Indoor air exposures associated with Areas A and B are based on current land use (i.e., existing buildings) and future land use (i.e. future building on unpaved areas). Area A evaluated for the current scenario and both Areas are evaluated for the future scenario.
Future	Site Soils	All Soils	Surface and Subsurface Soil Both Area A and Area B	Trespasser	Youth	Dermal	On-site	Evidence of trespasser activity on-site.
						Ingestion	On-site	Evidence of trespasser activity on-site.
						Inhalation of particulates	On-site	Evidence of trespasser activity on-site.
						Inhalation of volatiles	On-site	Evidence of trespasser activity on-site.
				Site Worker (Outdoor)	Adult	Dermal	On-site	Current and likely future land use is industrial.
						Ingestion	On-site	Current and likely future land use is industrial.
						Inhalation of particulates	On-site	Current and likely future land use is industrial.
						Inhalation of volatiles	On-site	Current and likely future land use is industrial.
				Construction Worker	Adult	Dermal	On-site	Potential redevelopment or redesign of the site is plausible. Assumes construction worker would have a combined soil exposure by excavating through both layers.
						Ingestion	On-site	Potential redevelopment or redesign of the site is plausible. Assumes construction worker would have a combined soil exposure by excavating through both layers.
						Inhalation of particulates	On-site	Potential redevelopment or redesign of the site is plausible. Assumes construction worker would have a combined soil exposure by excavating through both layers.
						Inhalation of volatiles	On-site	Potential redevelopment or redesign of the site is plausible. Assumes construction worker would have a combined soil exposure by excavating through both layers.

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Non-Cancer Toxicity Data Summary

Pathway: Ingestion/Dermal

Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD	Dermal RfD units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD: Target Organ	Dates of RfD:
Arsenic	Chronic	3.0e-04	mg/kg-day	3.0e-04	mg/kg-day	Skin	3	IRIS	04/30/01
Benzo(a)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
Benzo(a)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
Benzo(b)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
Benzo(k)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
Chrysene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
Dibenz(a,h)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
Indeno(1,2,3-cd)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
2,3,7,8-TCDD	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
4,4'-DDE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
4,4'-DDT	Chronic	5.0e-04	mg/kg-day	5.0e-04	mg/kg-day	Liver	100	IRIS	04/30/01
alph-BHC	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
Aldrin	Chronic	3.0e-05	mg/kg-day	N/A	N/A	Liver	1000	IRIS	04/30/01
Dieldrin	Chronic	5.0e-05	N/A	N/A	N/A	Liver	100	IRIS	04/30/01
Endrin aldehyde	Chronic	3.0e-04	mg/kg-day	N/A	N/A	Liver	100	IRIS	04/30/01
gamma-Chlordane	Chronic	5.0e-04	mg/kg-day	5.0e-04	mg/kg-day	Liver	300	IRIS	04/30/01
Heptachlor	Chronic	5.0e-04	mg/kg-day	N/A	N/A	Liver	300	IRIS	04/30/01
Heptachlor epoxide	Chronic	1.3e-05	mg/kg-day	N/A	N/A	Liver	1000	IRIS	04/30/01
Dioxin-like PCBs	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	Based on EPA, 1996 reassessment of PCB cancer toxicity	
Nondioxin-like PCBs	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	Addressed based on Aroclor 1016 and 1254 available in IRIS database. See also EPA 1996 reassessment of PCB cancer toxicity.	
Aroclor 1242	Chronic	7.0e-05	mg/kg-day	7.0e-05	mg/kg-day	Fetus	100	IRIS	08/09/02
Aroclor 1248	Chronic	2.0e-05	mg/kg-day	2.0e-05	mg/kg-day	Eye/ Immune	300	IRIS	04/30/01
Aroclor 1254	Chronic	2.0e-05	mg/kg-day	2.0e-05	mg/kg-day	Eye/ Immune	300	IRIS	04/30/01
Total PCB	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	Addressed as Aroclors 1016 and 1254 consistent with IRIS Chemical files.	
Trichloroethylene	Chronic	3.0e-04	mg/kg-day	N/A	N/A	Liver	3000	NCEA	02/26/02 Based on 2001 TCE reassessment.

Chemical of Concern	Chronic/ Subchronic	Inhalation RfC Value	Inhalation RfC Units	Inhalation RfD	Inhalation RfD units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfC/RfD: Target Organ	Dates:
Arsenic	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Benzo(a)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Benzo(a)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Benzo(b)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Benzo(k)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Chrysene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Dibenz(a,h)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Indeno(1,2,3-cd)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
2,3,7,8-TCDD	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
4,4'-DDE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
4,4'-DDT	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
alph-BHC	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Aldrin	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Dieldrin	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Endrin aldehyde	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
gamma-Chlordane	Chronic	7.0e-01	mg/m³	2.0e-04	mg/kg- day	Liver	1000	IRIS	04/30/01
Heptachlor	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Heptachlor epoxide	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
Dioxin-like PCBs	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	NCEA	–
Nondioxin-like PCBs	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	NCEA	–
Aroclor 1242	Chronic	N/A	N/A	7.0e-05	mg/kg- day	Fetus	100	IRIS	08/09/02
Aroclor 1248	Chronic	N/A	N/A	2.0e-05	mg/kg- day	Eye/ Immune	300	IRIS	04/30/01
Aroclor 1254	Chronic	N/A	N/A	2.0e-05	mg/kg- day	Eye/ Immune	300	IRIS	04/30/01
Total PCBs	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	NCEA	–
Trichloroethylene	Chronic	4.0e+01	mg/m³	1.1e-02	mg/kg- day	CNS	1000	NCEA	02/26/02 Based on 2001 TCE reassessment.

CNS: Central Nervous System
N/A: No information available
IRIS: Integrated Risk Information System, U.S. EPA
HEAST: Health Effects Assessment Summary Tables - 1997 with Updates by Superfund Technical Support Center, U.S. EPA
NCEA: National Center for Environmental Assessment - Superfund Technical Support Center, U.S. EPA

Summary of Toxicity Assessment

This table provides non-carcinogenic risk information which is relevant to the contaminants of concern. When available, the chronic toxicity data have been used to develop oral reference doses (RfDs).

TABLE 4
Cancer Toxicity Data Summary

Pathway: Ingestion, Dermal

Chemical of Concern	Oral Cancer Slope Factor	Units	Adjusted Cancer Slope Factor (for Dermal)	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
Arsenic	1.5e+00	1/(mg/kg-day)	1.5e+00	1/(mg/kg-day)	A	IRIS	04/30/01
Benzo(a)anthracene	7.3e-01	1/(mg/kg-day)	7.3e-01	1/(mg/kg-day)	B2	EPA	07/01/93
Benzo(a)pyrene	7.3e+00	1/(mg/kg-day)	7.3e+00	1/(mg/kg-day)	B2	IRIS	04/30/01
Benzo(b)fluoranthene	7.3e-01	1/(mg/kg-day)	7.3e-01	1/(mg/kg-day)	B2	EPA	07/01/93
Benzo(k)fluoranthene	7.3e-02	1/(mg/kg-day)	7.3e-02	1/(mg/kg-day)	B2	EPA	07/01/93
Chrysene	7.3e-03	1/(mg/kg-day)	7.3e-03	1/(mg/kg-day)	B2	EPA	07/01/93
Dibenz(a,h)anthracene	7.3e+00	1/(mg/kg-day)	7.3e+00	1/(mg/kg-day)	B2	EPA	07/01/93
Indeno(1,2,3-cd)pyrene	7.3e-01	1/(mg/kg-day)	7.3e-01	1/(mg/kg-day)	B2	EPA	11/01/00
2,3,7,8-TCDD	1.5e+05	1/(mg/kg-day)	1.5e+05	1/(mg/kg-day)	B2	HEAST	07/31/97
4,4'-DDE	3.4e-01	1/(mg/kg-day)	N/A	N/A	B2	IRIS	04/30/01
4,4'-DDT	3.4e-01	1/(mg/kg-day)	3.4e-01	1/(mg/kg-day)	B2	IRIS	04/30/01
alph-BHC	6.3e+00	1/(mg/kg-day)	N/A	N/A	B2	IRIS	04/30/01
Aldrin	1.7e+01	1/(mg/kg-day)	N/A	N/A	B2	IRIS	04/30/01
Dieldrin	1.6e+01	1/(mg/kg-day)	N/A	N/A	B2	IRIS	04/30/01
Endrin aldehyde	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	-
gamma-Chlordane	3.5e-01	1/(mg/kg-day)	3.5e-01	1/(mg/kg-day)	B2	IRIS	03/30/01
Heptachlor	4.5e+00	1/(mg/kg-day)	N/A	N/A	B2	IRIS	03/30/01
Heptachlor epoxide	9.1e+00	1/(mg/kg-day)	N/A	N/A	B2	IRIS	03/30/01
Dioxin-like PCBs	1.5e+05	1/(mg/kg-day)	1.5e+05	1/(mg/kg-day)	B2	HEAST	07/31/97 Based on 1996 PCB reassessment
Nondioxin-like PCBs	2.0e+00	1/(mg/kg-day)	2.0e+00	1/(mg/kg-day)	B2	IRIS	04/30/01 Based on 1996 PCB reassessment
Aroclor 1242	N/A	N/A	N/A	N/A	N/A	Based on total PCBs.	
Aroclor 1248	N/A	N/A	N/A	N/A	N/A		
Aroclor 1254	N/A	N/A	N/A	N/A	N/A		
Total PCBs	2.0e+00	1/(mg/kg-day)	2.0e+00	1/(mg/kg-day)	B2	IRIS	04/30/01
Trichloroethylene	4.0e-01	1/(mg/kg-day)	N/A	N/A	B1	NCEA	2/26/02 Based on 2001 TCE reassessment

TABLE 4 continued

Pathway: Inhalation

Chemical of Concern	Unit Risk	Units	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
Arsenic	4.3e-03	$1/(ug/m^3)$	1.5e+01	1/(mg/kg-day)	A	IRIS	04/30/01
Benzo(a)anthracene	N/A	N/A	3.1e-01	1/(mg/kg-day)	B2	EPA	07/01/93
Benzo(a)pyrene	N/A	N/A	3.1e+00	1/(mg/kg-day)	B2	NCEA	11/01/00
Benzo(b)fluoranthene	N/A	N/A	3.1e-01	1/(mg/kg-day)	B2	EPA	07/01/93
Benzo(k)fluoranthene	N/A	N/A	3.1e-02	1/(mg/kg-day)	B2	EPA	07/01/93
Chrysene	N/A	N/A	3.1e-03	1/(mg/kg-day)	B2	EPA	07/01/93
Dibenz(a,h)anthracene	N/A	N/A	3.1e+00	1/(mg/kg-day)	B2	EPA	07/01/93
Indeno(1,2,3-cd)pyrene	N/A	N/A	3.1e-01	1/(mg/kg-day)	B2	EPA	07/01/93
2,3,7,8-TCDD	3.3e+01	$1/(ug/m^3)$	1.5e+05	1/(mg/kg-day)	B2	HEAST	07/31/97
4,4'-DDE	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
4,4'-DDT	9.7e-05	$1/(ug/m^3)$	3.4e-01	1/(mg/kg-day)	B2	IRIS	04/30/01
alph-BHC	1.8e-03	$1/(ug/m^3)$	6.3e+00	N/A	B2	IRIS	04/30/01
Aldrin	4.9e-03	$1/(ug/m^3)$	1.7e+01	N/A	B2	IRIS	04/30/01
Dieldrin	4.6e-03	$1/(ug/m^3)$	1.6e+01	N/A	B2	IRIS	04/30/01
Endrin aldehyde	N/A	N/A	N/A	N/A	N/A	IRIS; HEAST	–
gamma-Chlordane	1.0e-04	$1/(ug/m^3)$	3.5e-01	1/(mg/kg-day)	B2	IRIS	04/30/01
Heptachlor	1.3e-03	$1/(ug/m^3)$	4.6e+00	N/A	B2	IRIS	04/30/01
Heptachlor epoxide	2.6e-03	$1/(ug/m^3)$	9.1e+00	N/A	B2	IRIS	04/30/01
Dioxin-like PCBs	3.3e+01	$1/(ug/m^3)$	1.5e+05	1/(mg/kg-day)	B2	HEAST	07/31/97 Based on 1996 PCB reassessment
Nondioxin-like PCBs	N/A	N/A	4.0e-01	1/(mg/kg-day)	B2	IRIS	04/30/01 Based on 1996 PCB reassessment
Aroclor 1242	N/A	N/A	N/A	N/A	N/A	Based on total PCBs	
Aroclor 1248	N/A	N/A	N/A	N/A	N/A		
Aroclor 1254	N/A	N/A	N/A	N/A	N/A		
Total PCBs	N/A	N/A	4.0e-01	1/(mg/kg-day)	B2	IRIS	04/30/01
Trichloroethylene	1.1e-04	$1/(ug/m^3)$	4.0e-01	N/A	N/A	NCEA	02/26/02 Based on 2001 TCE reassessment.

Key

N/A: No information available
HEAST: Health Effects Assessment Summary Tables, U.S. EPA
IRIS: Integrated Risk Information System, U.S. EPA
NCEA: National Center for Environmental Assessment, U.S. EPA

EPA Group:

A - Human carcinogen
B1 - Probable Human Carcinogen-Indicates that limited human data are available
B2 - Probable Human Carcinogen-Indicates sufficient evidence in animals associated with the site and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Summary of Toxicity Assessment

This table provides carcinogenic risk information which is relevant to the contaminants of concern. Toxicity data are provided for both the oral and inhalation routes of exposure.

TABLE 5

Risk Characterization Summary - Carcinogens Exceeding a Cancer Risk of 1E-6
Reasonable Maximum Exposure (RME)

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area A	Benzo(a)pyrene	1.4e-06	4.4e-10	1.7e-06	3.2e-06
			Aldrin	1.1e-05	2.5e-08	–	1.1e-05
			Total PCBs	4.9e-05	2.3e-07	6.5e-05	1.1e-04
			Arsenic	9.5e-06	3.8e-09	2.7e-06	1.2e-05
						Surface Soil Area A Risk =	1.4e-04

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (age10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Benzo(a)anthracene	2.1e-05	1.5e-08	2.6e-05	4.6e-05
			Benzo(a)pyrene	1.2e-04	3.7e-08	1.5e-04	2.6e-04
			Benzo(b)fluoranthene	3.4e-06	5.0e-09	4.2e-06	7.7e-06
			Benzo(k)fluoranthene	1.0e-06	2.1e-10	1.3e-06	2.3e-06
			Dibenz(a,h)anthracene	1.5e-05	1.4e-09	1.9e-05	3.4e-05
			Indeno(1,2,3-cd)pyrene	5.9e-06	8.4e-10	7.3e-06	1.3e-05
			2,3,7,8-TCDD	8.3e-05	3.2e-09	2.4e-05	1.1e-04
			4,4'-DDE	1.3e-05	–	–	1.3e-05
			alpha-BHC	1.0e-06	3.0e-08	–	1.1e-06
			Dieldrin	1.0e-04	7.6e-07	–	1.0e-04
			Heptachlor epoxide	7.7e-05	2.4e-07	–	7.7e-05
			Dioxin-like PCBs	3.9e-02	1.5e-06	1.1e-02	5.0e-02
			nondioxin-like PCBs	4.4e-03	2.1e-05	5.8e-03	1.0e-02
			Total PCBs	1.2e-03	6.0e-06	1.7e-03	2.9e-03
			Arsenic	3.3e-06	1.3e-09	9.5e-07	4.3e-06
						Surface Soil (Area B with Outliers) Risk* =	3.6e-03
						Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =	6.0e-02

TABLE 5 continued

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (age10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B without Outliers	Benzo(a)anthracene	1.4e-06	4.4e-10	1.7e-06	3.2e-06
			2,3,7,8-TCDD	8.3e-05	3.2e-09	2.4e-05	1.1e-04
			Dieldrin	1.8e-05	1.4e-07	–	1.8e-05
			Heptachlor epoxide	4.2e-06	1.3e-08	–	4.2e-06
			Dioxin-like PCBs	3.9e-02	1.5e-06	1.1e-02	5.0e-02
			Nondioxin-like PCBs	4.4e-03	2.1e-05	5.8e-03	1.0e-02
			Total PCBs	1.3e-04	6.1e-07	1.7e-04	3.0e-04
			Arsenic	3.3e-06	1.3e-09	9.5e-07	4.3e-06
						Surface Soil (Area B without Outliers) Risk* =	4.4e-04
						Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =	6.0e-02

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area A	Benzo(a)anthracene	7.1e-07	2.7e-09	6.1e-07	1.3e-06
			Benzo(a)pyrene	6.4e-06	1.0e-08	5.5e-06	1.2e-05
			Benzo(b)fluoranthene	9.2e-07	6.8e-09	7.9e-07	1.7e-06
			Dibenz(a,h)anthracene	1.1e-06	5.9e-10	9.7e-07	2.1e-06
			Aldrin	4.9e-05	5.8e-07	–	5e-05
			Total PCBs	2.2e-04	8.9e-06	2.1e-04	4.4e-04
			Arsenic	4.3e-05	1.4e-7e	8.6e-06	5.2e-05
						Surface Soil Area A Risk =	5.6e-04

TABLE 5 continued

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Trichloroethylene	7.0e-08	1.8e-06	–	1.9e-06
			Benzo(a)anthracene	9.4e-05	3.6e-07	8.1e-05	1.8e-04
			Benzo(a)pyrene	5.3e-04	8.6e-07	4.6e-04	9.9e-04
			Benzo(b)fluoranthene	1.6e-05	1.2e-07	1.3e-05	2.9e-05
			Benzo(k)fluoranthene	4.6e-06	5.0e-09	4.0e-06	8.6e-06
			Chrysene	8.5e-07	1.1e-08	7.3e-07	1.6e-06
			Dibenz(a,h)anthracene	6.9e-05	3.6e-08	5.9e-05	1.3e-04
			Indeno(1,2,3-cd)pyrene	2.7e-05	2.1e-08	2.3e-05	5.0e-05
			2,3,7,8-TCDD	3.8e-04	1.2e-07	7.5e-05	4.5e-04
			4,4'-DDE	5.8e-05	–	–	5.8e-05
			4,4'-DDT	2.1e-06	6.4e-09	4.2e-07	2.6e-06
			alpha-BHC	4.8e-06	6.9e-07	–	5.4e-06
			Dieldrin	4.6e-04	1.7e-05	–	4.8e-04
			gamma-Chlordane	1.1e-06	3.6e-10	2.9e-07	1.4e-06
			Heptachlor	2.7e-06	9.6e-08	–	2.8e-06
			Heptachlor epoxide	3.5e-04	5.6e-06	–	3.6e-04
			Dioxin-like PCBs	1.6e-01	5.9e-05	3.5e-02	2.0e-01
			Nondioxin-like PCBs	2e-2	8.0e-04	1.8e-2	3.9e-02
			Total PCBs	5.7e-03	2.3e-04	5.3e-03	1.1e-02
			Arsenic	1.5e-05	4.9e-08	3.0e-06	1.8e-05
Surface Soil (Area B with Outliers) Risk* =							1.4e-02
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							2.4e-01

TABLE 5 continued

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B without Outliers	Benzo(a)anthracene	6.2e-07	2.4e-9	5.3e-07	1.2e-06
			Benzo(a)pyrene	6.4e-06	1.0e-08	5.5e-06	1.2e-05
			Benzo(b)fluoranthene	7.6e-07	5.6e-09	6.5e-07	1.4e-06
			Dibenz(a,h)anthracene	1.4e-06	7.4e-10	1.2e-06	2.6e-06
			2,3,7,8-TCDD	3.8e-04	1.2e-07	7.5e-05	4.5e-04
			4,4'-DDE	1.5e-06	–	–	1.5e-06
			Dieldrin	8.3e-05	3.1e-06	–	8.6e-05
			Heptachlor epoxide	1.9e-05	3.1e-07	–	1.9e-05
			Dioxin-like PCBs	1.6e-01	5.9e-05	3.5e-02	2.0e-01
			Nondioxin-like PCBs	2.0e-02	7.9e-04	1.8e-02	3.9e-02
			Total PCBs	5.8e-04	2.3e-05	5.4e-04	1.1e-03
			Arsenic	1.5e-05	4.9e-08	3.0e-06	1.8e-05
						Surface Soil (Area B without Outliers) Risk* =	1.7e-03
						Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =	2.4e-01

Scenario Timeframe: Current/Future
Receptor Population: Site Worker (Indoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Building Dust	Building Dust	Building Interior	Arsenic	5.1e-06	–	2.0e-06	7.1e-06
Site Soils	Air	Indoor Air- Area B	1,1-Dichloroethylene	–	1.4e-05	–	1.4e-05
			Bezene	–	2.2e-06	–	2.2e-06
			Tetrachloroethylene	–	4.8e-06	–	4.8e-06
			Trichloroethylene	–	9.9e-04	–	9.9e-04
			Vinyl chloride	–	8.2e-06	–	8.2e-06
						Indoor (Area B) Risk =	1.0e-03

TABLE 5 continued

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor Age:	Youth (age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	Trichloroethylene	2.3e-07	1.2e-06	–	1.4e-06
			Benzo(a)anthracene	5.6e-06	4.2e-09	6.9e-06	1.3e-05
			Benzo(a)pyrene	4.2e-05	1.3e-08	5.2e-05	9.5e-05
			Benzo(b)fluoranthene	1.4e-06	2.1e-09	1.7e-06	3.2e-06
			Dibenz(a,h)anthracene	7.1e-06	6.6e-10	8.7e-06	1.6e-05
			Indeno(1,2,3-cd)pyrene	1.8e-06	2.5e-10	2.2e-06	3.9e-06
			2,3,7,8-TCDD	8.3e-05	3.2e-09	2.4e-05	1.1e-04
			4,4'-DDE	2.4e-05	–	–	2.4e-05
			4,4'-DDT	5.8e-05	3.3e-08	1.7e-05	7.5e-05
			Aldrin	1.4e-04	3.3e-07	–	1.4e-04
			alpha-BHC	1.3e-06	3.8e-08	–	1.3e-06
			Dieldrin	1.4e-03	1.0e-05	–	1.4e-03
			gamma-Chlordane	3.0e-05	1.2e-09	1.1e-05	4.1e-05
			Heptachlor	2.3e-06	1.6e-08	–	2.3e-06
			Heptachlor epoxide	9.0e-05	2.8e-07	–	9.0e-05
			Dioxin-like PCBs	3.9e-02	1.5e-06	1.1e-02	5.0e-02
			Nondioxin-like PCBs	4.4e-03	2.1e-05	5.8e-03	1.0e-02
			Total PCBs	2.2e-03	1.0e-05	2.9e-03	5.1e-03
			Arsenic	4.8e-06	1.9e-09	1.4e-06	6.2e-06
All Soils (Area B with Outliers) Risk* =							7.1e-03
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							6.0e-02

TABLE 5 continued

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Benzo(a)pyrene	1.1e-06	3.3e-10	1.3e-06	2.4e-06
			Dibenz(a,h)anthracene	9.1e-07	8.5e-11	1.1e-06	2.0e-06
			2,3,7,8-TCDD	8.3e-05	3.2e-09	2.4e-05	1.1e-04
			Aldrin	2.0e-05	4.7e-08	–	2.0e-05
			Dieldrin	3.4e-05	2.6e-07	–	3.4e-05
			Heptachlor epoxide	2.6e-06	8.1e-09	–	2.6e-06
			Dioxin-like PCBs	3.9e-02	1.5e-06	1.1e-02	5.0e-02
			Nondioxin-like PCBs	4.4e-03	2.1e-05	5.8e-03	1.0e-02
			Total PCBs	3.1e-04	1.5e-06	4.1e-04	7.3e-04
			Arsenic	2.6e-06	1.0e-09	7.4e-07	3.3e-06
All Soils (Area B without Outliers) Risk* =							9.0e-04
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							6.0e-02

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soil	All Soils	Area A with Outliers	Benzo(a)pyrene	3.0e-06	4.8e-09	2.6e-06	5.6e-06
			Dibenz(a,h)anthracene	1.2e-06	6.4e-10	1.0e-06	2.3e-06
			Aldrin	1.3e-05	1.5e-07	–	1.3e-05
			Dieldrin	1.5e-05	5.5e-07	–	1.5e-05
			Heptachlor	2.5e-06	9.1e-08	–	2.6e-06
			Heptachlor epoxide	2.6e-06	4.2e-08	–	2.6e-06
			Total PCBs	9.7e-05	3.9e-06	9.0e-05	1.9e-04
			Arsenic	9.9e-06	3.2e-08	2.0e-06	1.2e-05
All Soils (Area A with Outliers) Risk =							2.4e-04

TABLE 5 continued

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soil	All Soils	Area A without Outliers	Benzo(a)pyrene	2.0e-06	3.1e-09	1.7e-06	3.6e-06
			Dibenz(a,h)anthracene	1.2e-06	6.4e-10	1.0e-06	2.3e-06
			Aldrin	7.0e-06	8.2e-08	–	7.0e-06
			Dieldrin	1.3e-06	4.9e-08	–	1.4e-06
			Heptachlor epoxide	2.6e-06	4.2e-08	–	2.6e-06
			Total PCBs	7.7e-05	3.1e-06	7.1e-05	1.5e-04
			Arsenic	9.9e-06	3.2e-08	2.0e-06	1.2e-05
All Soils (Area A without Outliers) Risk =							1.8e-04

TABLE 5 continued

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	Trichloroethylene	1.1e-06	2.8e-05	–	2.9e-05
			Benzo(a)anthracene	2.5e-05	9.7e-08	2.2e-05	4.7e-05
			Benzo(a)pyrene	1.9e-04	3.1e-07	1.7e-04	3.6e-04
			Benzo(b)fluoranthene	6.4e-06	4.7e-08	5.5e-06	1.2e-05
			Benzo(k)fluoranthene	1.4e-06	1.6e-09	1.2e-06	2.7e-06
			Dibenz(a,h)anthracene	3.2e-05	1.7e-08	2.8e-05	6.0e-05
			Indeno(1,2,3-cd)pyrene	8.0e-06	6.2e-09	6.9e-06	1.5e-05
			2,3,7,8-TCDD	3.8e-04	1.2e-07	7.5e-05	4.5e-04
			4,4'-DDE	1.1e-04	–	–	1.1e-04
			4,4'-DDT	2.7e-04	7.9e-07	5.3e-05	3.2e-04
			Aldrin	6.4e-04	7.6e-06	–	6.5e-04
			alpha-BHC	5.9e-06	8.6e-07	–	6.8e-06
			Dieldrin	6.3e-03	2.4e-04	–	6.5e-03
			gamma-Chlordane	1.3e-04	4.4e-08	3.6e-05	1.7e-04
			Heptachlor	1.0e-05	3.7e-07	–	1.1e-05
			Heptachlor epoxide	4.1e-04	6.5e-06	–	4.2e-04
			Dioxin-like PCBs	1.6e-01	5.9e-05	3.5e-02	2.0e-01
			Nondioxin-like PCBs	2.0e-02	7.9e-04	1.8e-02	3.9e-02
			Total PCBs	9.9e-03	4.0e-04	9.2e-03	1.9e-02
			Arsenic	2.2e-05	7.2e-08	4.3e-06	2.6e-05
All Soils (Area B with Outliers) Risk* =							2.9e-02
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							2.4e-01

TABLE 5 continued

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Trichloroethylene	2.5e-07	6.6e-06	--	6.8e-06
			Benzo(a)pyrene	4.8e-06	7.8e-09	4.1e-06	9.0e-06
			Benzo(b)fluoranthene	7.8e-07	5.8e-09	6.7e-07	1.5e-06
			Dibenz(a,h)anthracene	4.1e-06	2.2e-09	3.5e-06	7.7e-06
			2,3,7,8-TCDD	3.8e-04	1.2e-07	7.5e-05	4.5e-04
			4,4'-DDE	2.2e-06	--	--	2.2e-06
			Aldrin	9.1e-05	1.1e-06	--	9.2e-05
			alpha-BHC	1.8e-06	2.6e-07	--	2.1e-06
			Dieldrin	1.6e-04	5.9e-06	--	1.6e-04
			Heptachlor epoxide	1.2e-05	1.9e-07	--	1.2e-05
			Dioxin-like PCBs	1.6e-01	5.9e-05	3.5e-02	2.0e-01
			Nondioxin-like PCBs	2.0e-02	7.9e-04	1.8e-02	3.9e-02
			Total PCBs	1.4e-03	5.7e-05	1.3e-03	2.8e-03
			Arsenic	1.2e-05	3.9e-08	2.3e-06	1.4e-05
All Soils (Area B without Outliers) Risk* =							3.5e-03
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							2.4e-01

TABLE 5 continued

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	Trichloroethylene	1.3e-07	8.7e-06	--	8.9e-06
			Benzo(a)anthracene	3.2e-06	3.0e-08	1.3e-06	4.5e-06
			Benzo(a)pyrene	2.4e-05	9.2e-08	9.5e-06	3.4e-05
			Benzo(b)fluoranthene	8.1e-07	1.5e-08	3.2e-07	1.1e-06
			Dibenz(a,h)anthracene	4.1e-06	4.2e-09	1.6e-06	5.7e-06
			Indeno(1,2,3-cd)pyrene	1.0e-06	1.7e-09	4.0e-07	1.4e-06
			2,3,7,8-TCDD	4.8e-05	6.7e-09	4.3e-06	5.2e-05
			4,4'-DDE	1.4e-05	--	--	1.4e-05
			4,4'-DDT	3.4e-05	2.3e-07	3.0e-06	3.7e-05
			Aldrin	8.1e-05	2.4e-06	--	8.4e-05
			alpha-BHC	7.5e-07	2.7e-07	--	1.0e-06
			Dieldrin	8.0e-04	7.5e-05	--	8.7e-04
			gamma-Chlordane	1.7e-05	2.4e-09	2.0e-06	1.9e-05
			Heptachlor	1.3e-06	1.2e-07	--	1.4e-06
			Heptachlor epoxide	5.2e-05	2.0e-06	--	5.4e-05
			Dioxin-like PCBs	2.2e-02	3.2e-06	2.0e-03	2.5e-02
			Nondioxin-like PCBs	2.5e-03	5.0e-05	1.1e-03	3.6e-03
			Total PCBs	1.3e-03	2.5e-05	5.3e-04	1.8e-03
			Arsenic	2.8e-06	3.9e-09	2.5e-07	3.0e-06
						All Soils (Area B with Outliers) Risk* =	3.0e-03
						Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =	2.8e-02

TABLE 5 continued

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Trichloroethylene	3.2e-08	2.1e-06	–	2.1e-06
			2,3,7,8-TCDD	4.8e-05	6.7e-09	4.3e-06	5.2e-05
			Aldrin	1.2e-05	3.3e-07	–	1.2e-05
			Dieldrin	2.0e-05	1.9e-06	–	2.2e-05
			Heptachlor epoxide	1.5e-06	5.8e-08	–	1.5e-06
			Dioxin-like PCBs	2.2e-02	3.2e-06	2.0e-03	2.5e-02
			Nondioxin-like PCBs	2.5e-03	5.0e-05	1.1e-03	3.6e-03
			Total PCBs	1.8e-04	3.6e-06	7.5e-05	2.6e-04
			Arsenic	1.5e-06	2.1e-09	1.4e-07	1.6e-06
All Soils (Area B without Outliers) Risk* =							3.5e-04
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							2.8e-02

Key

– : Route of exposure is not applicable to this medium.
* : Risks associated with Dioxin-like PCBs and Nondioxin-like PCBs are not included in this total and appear below.

Summary of Risk Characterization - Carcinogens

The table presents risk estimates for the significant routes of exposure. These risk estimates are based on a reasonable maximum exposure and were developed by taking into account various health-protective assumptions about the frequency and duration of the receptors exposure to surface and subsurface soils, as well as the toxicity of the COCs.

TABLE 6

Risk Characterization Summary - Carcinogens Exceeding a Cancer Risk of 1E-4
Central Tendency Exposure (CTE)

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (age10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Benzo(a)anthracene	5.2e-06	3.2e-09	2.6e-06	7.7e-06
			Benzo(a)pyrene	2.9e-05	7.6e-09	1.5e-05	4.4e-05
			Benzo(b)fluoranthene	8.6e-07	1.0e-09	4.2e-07	1.3e-06
			Dibenz(a,h)anthracene	3.8e-06	3.0e-10	1.9e-06	5.7e-06
			Indeno(1,2,3-cd)pyrene	1.5e-06	1.8e-10	7.3e-07	2.2e-06
			2,3,7,8-TCDD	2.1e-05	6.8e-10	2.4e-06	2.3e-05
			4,4'-DDE	3.2e-06	--	--	3.2e-06
			Dieldrin	2.5e-05	1.6e-07	--	2.5e-05
			Heptachlor epoxide	1.9e-05	5.1e-08	--	1.9e-05
			Dioxin-like PCBs	9.8e-03	3.2e-07	1.1e-03	1.1e-02
			nondioxin-like PCBs	1.1e-03	4.4e-06	5.8e-04	1.7e-03
			Total PCBs	3.1e-04	1.2e-06	1.7e-04	4.8e-04
Surface Soil (Area B with Outliers) Risk* =							6.1e-04
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							1.3e-02

TABLE 6 continued

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Benzo(a)anthracene	2.4e-05	9.2e-08	2.1e-06	2.6e-05
			Benzo(a)pyrene	1.4e-04	2.2e-07	1.2e-05	1.5e-04
			Benzo(b)fluoranthene	4.0e-06	3.0e-08	3.4e-07	4.4e-06
			Benzo(k)fluoranthene	1.2e-06	1.3e-09	1.0e-07	1.3e-06
			Dibenz(a,h)anthracene	1.8e-05	9.3e-09	1.5e-06	1.9e-05
			Indeno(1,2,3-cd)pyrene	6.9e-06	5.3e-09	5.9e-07	7.5e-06
			2,3,7,8-TCDD	9.7e-05	3.2e-08	1.9e-06	9.9e-05
			4,4'-DDE	1.5e-05	--	--	1.5e-05
			alpha-BHC	1.2e-06	1.8e-07	--	1.4e-06
			Dieldrin	1.2e-04	4.4e-06	--	1.2e-04
			Heptachlor epoxide	9.0e-05	1.4e-06	--	9.2e-05
			Dioxin-like PCBs	4.5e-02	1.5e-05	9.1e-04	4.6e-02
			Nondioxin-like PCBs	5.1e-03	2.0e-04	4.7e-04	5.8e-03
			Total PCBs	1.5e-03	5.8e-05	1.3e-04	1.7e-03
			Arsenic	3.9e-06	1.3e-08	7.7e-08	4.0e-06
Surface Soil (Area B with Outliers) Risk* =							2.2e-03
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							5.2e-02

TABLE 6 continued

Scenario Timeframe:	Current
Receptor Population:	Site Worker (Outdoor)
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B without Outliers	Benzo(a)pyrene	1.7e-06	2.7e-9	1.4e-07	1.8e-06
			2,3,7,8-TCDD	9.7e-05	3.2e-08	1.9e-06	9.9e-05
			Dieldrin	2.1e-05	8.1e-07	–	2.2e-05
			Heptachlor epoxide	4.9e-06	7.9e-08	–	5.0e-06
			Dioxin-like PCBs	4.5e-02	1.5e-05	9.1e-04	4.6e-02
			Nondioxin-like PCBs	5.1e-03	2.0e-04	4.7e-04	5.8e-03
			Total PCBs	1.5e-04	6.0e-06	1.4e-05	1.7e-04
			Arsenic	3.9e-06	1.3e-08	7.7e-08	4.0e-06
						Surface Soil (Area B without Outliers) Risk* =	3.0e-04
						Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =	5.2e-02

Scenario Timeframe:	Current/Future
Receptor Population:	Site Worker (Indoor)
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Building Dust	Building Dust	Building Interior	Arsenic	1.2e-06	--	4.6e-08	1.2e-06
Site Soils	Air	Indoor Air- Area B	1,1-Dichloroethylene	–	3.2e-06	–	3.2e-06
			Tetrachloroethylene	–	1.1e-06	–	1.1e-06
			Trichloroethylene	–	2.3e-04	–	2.3e-04
			Vinyl chloride	–	1.9e-06	–	1.9e-06
						Indoor (Area B) Risk =	2.4e-04

TABLE 6 continued

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	Benzo(a)anthracene	1.4e-06	8.7e-10	6.9e-07	2.1e-06
			Benzo(a)pyrene	1.1e-05	2.7e-09	5.2e-06	1.6e-05
			Dibenz(a,h)anthracene	1.8e-06	1.4e-10	8.7e-07	2.6e-06
			2,3,7,8-TCDD	2.1e-05	6.8e-10	2.4e-06	2.3e-05
			4,4'-DDE	6.1e-06	--	--	6.1e-06
			4,4'-DDT	1.5e-05	6.9e-09	1.7e-06	1.6e-05
			Aldrin	3.5e-05	6.9e-08	--	3.5e-05
			Dieldrin	3.5e-04	2.2e-06	--	3.5e-04
			gamma-Chlordane	7.4e-06	2.4e-10	1.1e-06	8.5e-06
			Heptachlor epoxide	2.2e-05	5.9e-08	--	2.3e-05
			Dioxin-like PCBs	9.8e-03	3.2e-07	1.1e-03	1.1e-02
			Nondioxin-like PCBs	1.1e-03	4.4e-06	5.8e-04	1.7e-03
			Total PCBs	5.4e-04	2.2e-06	2.9e-04	8.4e-04
			Arsenic	1.2e-06	3.9e-10	1.4e-07	1.3e-06
					All Soils (Area B with Outliers) Risk* =		1.3e-03
					Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =		1.3e-02

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	2,3,7,8-TCDD	2.1e-05	6.8e-10	2.4e-06	2.3e-05
			Aldrin	5.0e-06	9.8e-09	--	5.0e-06
			Dieldrin	8.6e-06	5.4e-08	--	8.6e-06
			Dioxin-like PCBs	9.8e-03	3.2e-07	1.1e-03	1.1e-02
			Nondioxin-like PCBs	1.1e-03	4.4e-06	5.8e-04	1.7e-03
			Total PCBs	7.7e-05	3.1e-07	4.1e-05	1.2e-04
					All Soils (Area B without Outliers) Risk* =		1.6e-04
					Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =		1.3e-02

TABLE 6 continued

Scenario Timeframe:	Future
Receptor Population:	Site Worker (Outdoor)
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	Trichloroethylene	2.7e-07	7.1e-06	–	7.4e-06
			Benzo(a)anthracene	6.5e-06	2.5e-08	5.6e-07	7.1e-06
			Benzo(a)pyrene	5.0e-05	8.0e-08	4.3e-06	5.4e-05
			Benzo(b)fluoranthene	1.7e-06	1.2e-08	1.4e-07	1.8e-06
			Dibenz(a,h)anthracene	8.3e-06	4.3e-09	7.1e-07	9.0e-06
			Indeno(1,2,3-cd)pyrene	2.1e-06	1.6e-09	1.8e-07	2.2e-06
			2,3,7,8-TCDD	9.7e-05	3.2e-08	1.9e-06	9.9e-05
			4,4'-DDE	2.9e-05	–	–	2.9e-05
			4,4'-DDT	6.8e-05	2.0e-07	1.4e-06	7.0e-05
			Aldrin	1.6e-04	2.0e-06	–	1.7e-04
			alpha-BHC	1.5e-06	2.2e-07	–	1.7e-06
			Dieldrin	1.6e-03	6.1e-05	–	1.7e-03
			gamma-Chlordane	3.5e-05	1.1e-08	9.1e-07	3.5e-05
			Heptachlor	2.7e-06	9.5e-08	–	2.7e-06
			Heptachlor epoxide	1.1e-04	1.7e-06	–	1.1e-04
			Dioxin-like PCBs	4.5e-02	1.5e-05	9.1e-04	4.6e-02
			Nondioxin-like PCBs	5.1e-03	2.0e-04	4.7e-04	5.8e-03
			Total PCBs	2.6e-03	1.0e-04	2.4e-04	2.9e-03
			Arsenic	5.6e-06	1.8e-08	1.1e-07	5.7e-06
						All Soils (Area B with Outliers) Risk* =	5.2e-03
						Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =	5.2e-02

TABLE 6 continued

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Trichloroethylene	6.5e-08	1.7e-06	--	1.8e-06
			Benzo(a)pyrene	1.2e-06	2.0e-09	1.1e-07	1.3e-06
			Dibenz(a,h)anthracene	1.1e-06	5.6e-10	9.1e-08	1.2e-06
			2,3,7,8-TCDD	9.7e-05	3.2e-08	1.9e-06	9.9e-05
			Aldrin	2.3e-05	2.8e-07	--	2.4e-05
			Dieldrin	4.0e-05	1.5e-06	--	4.2e-05
			Heptachlor epoxide	3.0e-06	4.8e-08	--	3.1e-06
			Dioxin-like PCBs	4.5e-02	1.5e-05	9.1e-04	4.6e-02
			Nondioxin-like PCBs	5.1e-03	2.0e-04	4.7e-04	5.8e-03
			Total PCBs	3.6e-04	1.5e-05	3.4e-05	4.1e-04
			Arsenic	3.0e-06	1.0e-08	6.0e-08	3.1e-06
All Soils (Area B without Outliers) Risk* =							5.9e-04
Total Risk for Dioxin-like PCBs and Nondioxin-like PCBs =							5.2e-02

Key

-- : Route of exposure is not applicable to this medium.
* : Risks associated with Dioxin-like PCBs and Nondioxin-like PCBs are not included in this total and appear below.

Summary of Risk Characterization - Carcinogens

The table presents risk estimates for the significant routes of exposure. These risk estimates are based on a central tendency exposure and were developed by taking into account various health-protective assumptions about the frequency and duration of the receptors exposure to surface and subsurface soils, as well as the toxicity of the COCs.

TABLE 7

Risk Characterization Summary - Non-Carcinogens Exceeding a Hazard Index of 1

Reasonable Maximum Exposure (RME)

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area A	Aroclor 1254	Eye/Immune	9	0	12	21
							Surface Soil (Area A) Hazard Index Total / Receptor Hazard Index =	21
							Eye / Immune Index =	21

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Aroclor 1254	Eye/Immune	230	6	310	550
			Heptachlor epoxide	Liver	5	--	--	5
							Surface Soil (Area B with Outliers) Hazard Index Total / Receptor Hazard Index =	560
							Eye / Immune Hazard Index	550
							Liver Hazard Index =	5

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B without Outliers	Aroclor 1254	Eye/Immune	15	0	19	34
							Surface Soil (Area A without Outliers)/ Receptor Hazard Index Total =	34
							Eye / Immune Hazard Index =	34

TABLE 7 continued

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area A	Aroclor 1254	Eye/Immune	15	3	14	32
							Surface Soil (Area A) / Receptor Hazard Index Total =	32
							Eye / Immune Hazard Index Total =	32

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Aroclor 1254	Eye/Immune	380	76	350	810
			Dieldrin	Liver	2	–	–	2
			Heptachlor epoxide	Liver	8	–	–	8
							Surface Soil (Area B with Outliers)/ Receptor Hazard Index Total =	820
							Eye / Immune Hazard Index Total =	810
							Liver Hazard Index Total =	10

Scenario Timeframe: Current
Receptor Population: Site Worke. (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B without Outliers	Arc lor 1254	Eye/Immune	24	5	22	51
							Surface Soil (Area B without Outliers) / Receptor Hazard Index Total =	51
							Eye / Immune Hazard Index Total =	51

TABLE 7 continued

Scenario Timeframe: Current/Future
Receptor Population: Site Worker (Indoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Building Dust	Building Dust	Building Interior	Aroclor 1254	Eye/Immune	51	--	94	150
							Building Interior / Receptor Hazard Index Total =	150
							Eye / Immune Hazard Index Total =	150

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A with Outliers	Aroclor 1248	Eye/Immune	2	0	2	4
			Aroclor 1254	Eye/Immune	3	0	4	7
							Site Soils (Area A with Outliers) / Receptor Hazard Index Total =	11
							Eye / Immune Hazard Index Total =	11

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-1[illegible] years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A without Outliers	Aroclor [illegible]254	Eye/Immune	2	0	3	5
							Site Soils (Area A without Outliers) / Receptor Hazard Index Total =	5
							Eye / Immune Hazard Index Total =	5

TABLE 7 continued

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	4,4'-DDT	Liver	3	--	1	4
			Aldrin	Liver	2	--	--	2
			Aroclor 1242	Fetus	6	0	8	15
			Aroclor 1248	Eye/Immune	83	2	110	200
			Aroclor 1254	Eye/Immune	380	9	510	900
			Dieldrin	Liver	13	--	--	13
			gamma-Chlordane	Liver	1	0	1	2
			Heptachlor epoxide	Liver	6	--	--	6
Surface Soil (Area B with Outliers) / Receptor Hazard Index Total =								1100
Fetus Hazard Index Total =								15
Eye / Immune Hazard Index Total =								1100
Liver Hazard Index Total =								26

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Aroclor 1248	Eye/Immune	12	0	16	28
			Aroclor 1254	Eye/Immune	47	1	63	110
Site Soils (Area B without Outliers) Hazard Index Total / Receptor Hazard Index =								140
Eye / Immune Hazard Index								140

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A with Outliers	Aroclor 1248	Eye/Immune	3	1	3	6
			Aroclor 1254	Eye/Immune	5	1	4	10
Site Soils (Area A with Outliers) Hazard Index Total / Receptor Hazard Index =								16
Eye / Immune Hazard Index								16

TABLE 7 continued

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A without Outliers	Aroclor 1254	Eye/Immune	4	1	3	8
Surface Soil (Area A without Outliers) Hazard Index Total / Receptor Hazard Index =								8
Eye / Immune Hazard Index								8

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	4,4'-DDT	Liver	4	--	1	5
			Aldrin	Liver	4	--	--	4
			Aroclor 1242	Fetus	10	2	9	21
			Aroclor 1248	Eye/Immune	140	27	130	300
			Aroclor 1254	Eye/Immune	630	130	580	1300
			Dieldrin	Liver	22	--	--	22
			gamma-Chlordane	Liver	2	0	1	3
			Heptachlor epoxide	Liver	10	--	--	10
Surface Soil (Area B with Outliers) Hazard Index Total / Receptor Hazard Index =								1700
Liver Hazard Index Total =								44
Fetus Hazard Index Total =								21
Eye / Immune Hazard Index =								1600

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Aroclor 1248	Eye/Immune	20	4	18	42
			Aroclor 1254	Eye/Immune	77	15	71	160
Site Soils Hazard (Area B without Outliers) Index Total / Receptor Hazard Index =								200
Eye / Immune Hazard Index								200

TABLE 7 continued

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A with Outliers	Aroclor 1248	Eye/Immune	9	1	4	13
			Aroclor 1254	Eye/Immune	15	2	8	23
Site Soils (Area A with Outliers)Hazard Index Total / Receptor Hazard Index =								36
Eye / Immune Hazard Index								36

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A without Outliers	Aroclor 1248	Eye/Immune	2	0	1	2
			Aroclor 1254	Eye/Immune	11	1	5	17
Site Soils (Area A without Outliers)Hazard Index Total / Receptor Hazard Index =								21
Eye / Immune Hazard Index								19

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	4,4'-DDT	Liver	14	--	1	15
			Aldrin	Liver	11	--	--	11
			Aroclor 12[illegible]2	Fetus	32	3	14	49
			Aroclor 1248	Eye/Immune	430	43	180	650
			Aroclor 1254	Eye/Immune	2000	200	830	3000
			Dieldrin	Liver	70	--	--	70
			Endrin aldehyde	Liver	2	--	--	2
			gamma-Chlordane	Liver	7	0	1	8
			Heptachlor epoxide	Liver	31	--	--	31
Site Soils (Area B with Outliers)Hazard Index Total / Receptor Hazard Index =								3800
Liver Hazard Index Total =								140
Fetus Hazard Index Total =								49
Eye / Immune Hazard Index =								3700

TABLE 7 continued

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Aldrin	Liver	2	--	--	2
			Aroclor 1242	Fetus	1	0	0	2
			Aroclor 1248	Eye/Immune	63	6	27	96
			Aroclor 1254	Eye/Immune	240	24	100	360
			Dieldrin	Liver	2	--	--	2
Site Soils (Area B without Outliers) Hazard Index Total / Receptor Hazard Index =								460
Liver Hazard Index Total =								3
Fetus Hazard Index Total =								2
Eye / Immune Hazard Index =								460

Key
-- : Route of exposure is not applicable to this medium.

Summary of Risk Characterization - Non-Carcinogens
The table presents hazard quotients (HQs) for each route of exposure and the hazard index (sum of hazard quotients) for all routes of exposure. The Risk Assessment Guidance for Superfund states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse non-cancer effects.

TABLE 8

Risk Characterization Summary - Non-Carcinogens Exceeding a Hazard Index of 1

Central Tendency Exposure (CTE)

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area A	Aroclor 1254	Eye/Immune	2.3	0.0	1.2	3.5
							Surface Soil Hazard Index Total / Receptor Hazard Index =	3.5
							Eye / Immune Index =	3.5

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Aroclor 1254	Eye/Immune	58.0	1.2	31.0	90.0
			Heptachlor epoxide	Liver	1.3	–	–	1.3
							Surface Soil Hazard Index Total / Receptor Hazard Index =	91.0
							Eye / Immune Hazard Index	91.0
							Liver Hazard Index =	1.3

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B without Outliers	Aroclor 1254	Eye/Immune	3.6	0.1	1.9	6.0
							Surface Soil / Receptor Hazard Index Total =	5.6
							Eye / Immune Hazard Index =	5.6

TABLE 8 continued

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area A	Aroclor 1254	Eye/Immune	15.0	2.9	1.3	19.0
							Surface Soil / Receptor Hazard Index Total =	19.0
							Eye / Immune Hazard Index Total =	19.0

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B with Outliers	Aroclor 1254	Eye/Immune	370	74	34	480
			Dieldrin	Liver	1.6	--	--	1.6
			Heptachlor epoxide	Liver	8	--	--	8
							Surface Soil / Receptor Hazard Index Total =	490
							Eye / Immune Hazard Index Total =	480
							Liver Hazard Index Total =	10

Scenario Timeframe: Current
Receptor Population: Site Worker (Outdoor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Area B without Outliers	Aroclor 1254	Eye/Immune	23	4.7	2.2	30
							Surface Soil / Receptor Hazard Index Total =	30
							Eye / Immune Hazard Index Total =	30

TABLE 8 continued

Scenario Timeframe: Current/Future
Receptor Population: Site Worker (Indoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Building Dust	Building Dust	Building Interior	Aroclor 1254	Eye/Immune	44	--	8	52
							Building Interior / Receptor Hazard Index Total =	52
							Eye / Immune Hazard Index Total =	52

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A with Outliers	Aroclor 1254	Eye/Immune	0.7	0.01	0.4	1.1
							Site Soils / Receptor Hazard Index Total =	1.1
							Eye / Immune Hazard Index Total =	1.1

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	Aroclor 1242	Fetus	1.5	0.03	0.8	2.4
			Aroclor 1248	Eye/Immune	21	0.42	11	32
			Aroclor 1254	Eye/Immune	95	1.9	51	150
			Dieldrin	Liver	3.4	--	--	3.4
			Heptachlor epoxide	Liver	1.5	--	--	1.5
							Surface Soil / Receptor Hazard Index Total =	190
							Fetus Hazard Index Total =	2
							Eye / Immune Hazard Index Total =	160
							Liver Hazard Index Total =	5

TABLE 8 continued

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Youth (Age 10-18 years)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Aroclor 1248	Eye/Immune	3	0.06	2	5
			Aroclor 1254	Eye/Immune	12	0.24	6	19
Site Soils Hazard Index Total / Receptor Hazard Index =								24
Eye / Immune Hazard Index								24

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A with Outliers	Aroclor 1248	Eye/Immune	3	0.6	3	4
			Aroclor 1254	Eye/Immune	5	1.0	4	6
Site Soils Hazard Index Total / Receptor Hazard Index =								10
Eye / Immune Hazard Index								10

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area A without Outliers	Aroclor 1254	Eye/Immune	3	1	0.3	4
Surface Soil Hazard Index Total / Receptor Hazard Index =								4
Eye / Immune Hazard Index								4

TABLE 8 continued

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B with Outliers	4,4'-DDT	Liver	4	–	0.1	4
			Aldrin	Liver	3	–	–	3
			Aroclor 1242	Fetus	10	2	0.9	13
			Aroclor 1248	Eye/Immune	130	27	12	170
			Aroclor 1254	Eye/Immune	610	120	56	790
			Dieldrin	Liver	21	–	–	21
			gamma-Chlordane	Liver	2	0.002	0.055	2
			Heptachlor epoxide	Liver	9	–	–	9
Surface Soil Hazard Index Total / Receptor Hazard Index =								1000
Liver Hazard Index Total =								40
Fetus Hazard Index Total =								13
Eye / Immune Hazard Index =								960

Scenario Timeframe: Future
Receptor Population: Site Worker (Outdoor)
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical c Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Site Soils	All Soils	Area B without Outliers	Aroclor 1248	Eye/Immune	19	4	2	25
			Aroclor 1254	Eye/Immune	75	15	7	97
Site Soils Hazard Index Total / Receptor Hazard Index =								120
Eye / Immune Hazard Index								120

Key

– : Route of exposure is not applicable to this medium.

Summary of Ri k Characterization - Non-Carcinogens

The table presents hazard quotients (HQs) for each route of exp sure and the hazard index (sum of hazard quotients) for all routes of exposure. The Risk Assessment Guidance for Superfund states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse non-cancer effects.

TABLE 9
SUMMARY OF COST ESTIMATES

SOIL ALTERNATIVES	TOTAL CAPITAL COST	ANNUAL O&M COST	ANNUAL OPERATING COST	TOTAL PRESENT WORTH
No Action	$0	$0	$0	$0
Excavation/Off-Site Disposal/Institutional Controls	$111,000,000	$124,000	N/A	$114,000,000
"Principal Threat" Excavation; Off-Site Disposal/Multi-Layer Cap/Institutional Controls	$58,000,000	$560,000	N/A	$72,000,000
Soil Vapor Extraction/Solidification/Multi-Layer Cap/Institutional Controls	$25,000,000	$440,000	$330,000	$36,000,000
Low Temperature Thermal Desorption/Multi-Layer Cap/Institutional Controls	$40,000,000	$440,000	$142,000	$52,000,000
"Principal Threat" Excavation; Low Temperature Thermal Desorption/Off-Site Disposal/Multi-Layer Cap/ Institutional Controls	$51,000,000	$440,000	$142,000	$62,000,000
BUILDING ALTERNATIVES				
No Action	$0	$0	N/A	$0
Decontamination and Surface Encapsulation/ Institutional Controls	$12,000,000	$220,000	N/A	$18,000,000
Demolition/Off-Site Disposal	$7,000,000	$0	N/A	$7,000,000

Table 10
Capital Costs for the Selected Remedy

Building Remedy	TOTAL QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIALS	COST
Remove concrete slab on grade (<8')	242,000	SF	$0.59	$0.20	$0.00	$191,180
Remove carpeting	14,600	SF	$0.23	$0.00	$0.00	$3,358
Remove wood floor	2,800	SF	$0.49	$0.00	$0.00	$1,372
Remove roof (built up)	208,950	SF	$0.62	$0.33	$0.00	$198,503
Remove concrete roof	4,000	SF	$2.40	$0.46	$0.00	$11,440
Remove misc. roof (i.e., vent, louver,etc.)	80	EA	$86.10	$0.00	$0.00	$6,888
Remove concrete beams	424	CF	$11.60	$2.22	$0.00	$5,860
Remove concrete support	624	CF	$10.39	$1.99	$0.00	$7,725
Remove concrete columns	2160	CF	$10.39	$1.99	$0.00	$26,741
Remove steel beams and columns	476	TON	$278.94	$16.07	$0.00	$140,277
Remove masonry wall (12")	136,075	SF	$1.38	$0.26	$0.00	$223,163
Remove interior walls	4,770	SF	$0.63	$0.00	$0.00	$3,005
Remove panel/sheet rock	18,460	SF	$0.67	$0.63	$0.00	$23,998
Remove wood wall	22,220	SF	$0.67	$0.63	$0.00	$28,886
Remove exterior wood wall	6,700	SF	$0.63	$0.00	$0.00	$4,221
Remove exterior siding	6,700	SF	$0.63	$0.00	$0.00	$4,221
Remove wood roof truss structure	22,750	SF	$0.62	$0.33	$0.00	$21,613
Remove metal roof	40,850	SF	$0.50	$0.00	$0.00	$20,425
Remove piping to 4"	59,600	LF	$3.15	$0.00	$0.00	$187,740
Remove piping to 8"	5,600	LF	$6.95	$0.00	$0.00	$38,920
Remove piping to 16"	70	LF	$13.90	$0.00	$0.00	$973
Remove lavatory/urinal	60	EA	$70.00	$0.00	$0.00	$4,200
Remove misc. fixtures	99	EA	$45.00	$0.00	$0.00	$4,455
Remove electrical conduits	52,900	LF	$2.50	$0.00	$0.00	$132,250
Remove duct < 2 ft.	8,300	LF	$2.87	$0.00	$0.00	$23,821
Remove duct > 2 ft.	3,750	LF	$4.30	$0.00	$0.00	$16,125
Select backfill	1,000	CY	$0.00	$0.00	$7.95	$7,950
T&D of non-hazardous material	19,055	TON	$0.00	$0.00	$91.58	$1,745,057
T&D of hazardous material	2,495	TON	$0.00	$0.00	$250.00	$623,750
Total Direct Construction Costs (TDCC)						$3,708,116
Area Code Factor @10%						$370,812
TDCC Subtotal						$4,078,927
Contingency @ 20% of TDCC						$815,785
Engineering and Construction Management @15% of TDCC						$611,839
Legal and Administrative @5% of TDCC						$203,946
Relocation Cost[1]						$1,198,800
Total Present Worth						6,909,298

The major facilities and construction components are based on best estimates obtained during a field reconnaissance on 02/11/03. Costs do not include dust control partitions, utility markouts and relocation.
No lead paint or asbestos survey was performed. Costs do not reflect any special handling.
[1] Relocation estimates include re-establishment costs ($10,000) and moving expenses ($50,000) per tenant. Estimate assumes 18 tenants may be eligible for relocation. Cost estimate includes an oversight fee of 11%.

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Table 10 continued

SOIL REMEDY			Labor		Equipment		Material		
	Estimated	Unit	Unit Price	Cost	Unit Price	Cost	Unit Price	Cost	Total Construction
Multi-Layer Cap									
Clearing and Grubbing	8.4	acre	$208.52	$1,751.57	$412.51	$3,465.08	$0.00	$0.00	$5,216.65
Top Soil (6")	16,000	cu yd	$2.95	$47,200.00	$2.21	$35,360.00	$23.25	$372,000.00	$454,560.00
Clean Fill(12")	31,000	cu yd	$4.00	$124,000.00	$3.50	$108,500.00	$17.23	$534,130.00	$766,630.00
Drainage Sand (6")	16,000	cu yd	$4.00	$64,000.00	$3.50	$56,000.00	$17.55	$280,800.00	$400,800.00
Compaction (24")	63,000	cu yd	$0.91	$57,330.00	$0.25	$15,750.00	$0.00	$0.00	$73,080.00
Geotextile (2 layer)	2,000,000	sq ft	$0.50	$1,000,000.00	$0.00	$0.00	$0.35	$700,000.00	$1,700,000.00
HDPE Liner	1,000,000	sq ft	$0.25	$250,000.00	$0.00	$0.00	$0.75	$750,000.00	$1,000,000.00
Vegetation	19.4	acre	$75.00	$1,940.00	$100.00	$100.00	$1,500.00	$29,100.00	$32,495.00
Capacitor Disposal Area									
Excavation	7,500	cu yd	$1.83	$13,725.00	$3.51	$26,325.00	$0.00	$0.00	$40,050.00
Clean Fill	9,375	cu yd	$4.00	$37,500.00	$3.04	$28,500.00	$17.23	$161,531.25	$227,531.25
Compaction	7,500	cu yd	$0.91	$6,825.00	$0.25	$1,875.00	$0.00	$0.00	$8,700.00
Engineered Control									
Excavation	2,300	cu yd	$1.83	$4,209.00	$3.51	$8,073.00	$0.00	$0.00	$12,282.00
Clean Fill	2,900	cu yd	$4.00	$11,600.00	$3.04	$8,816.00	$17.23	$49,967.00	$70,383.00
Top Soil	1,400	cu yd	$3.91	$5,474.00	$3.01	$4,214.00	$23.25	$32,550.00	$42,238.00
Compaction	2,300	cu yd	$0.91	$2,093.00	$0.25	$575.00	$0.00	$0.00	$2,668.00
Vegetation	0.7	acre	$75.00	$52.50	$100.00	$70.00	$1,500.00	$1,050.00	$1,172.50
LTTD									
Mobilization/Demobilization	2	ea	$0.00	$0.00	$0.00	$0.00	$120,000.00	$240,000.00	$240,000.00
Permit/Eng for site	2	ea	$0.00	$0.00	$0.00	$0.00	$40,833.00	$40,833.00	$40,833.00
Excavation	53,500	cu yd	$1.83	$97,905.00	$3.51	$187,785.00	$0.00	$0.00	$285,690.00
Debris Segregation	5,500	cu yd	$5.49	$30,195.00	$3.51	$19,305.00	$0.00	$0.00	$49,500.00
Indirect Fire, Rental & Oper.	80,500	ton	$1.80	$144,900.00	$1.22	$98,210.00	$98.42	$7,922,810.00	$8,165,920.00
Equip. Maint. (8%)	3	yr	$0.00	$0.00	$142,220.00	$426,660.00	$0.00	$0.00	$426,660.00
Excavation									
Excavation	53,500	cu yd	$1.83	$97,905	$3.51	$187,785	$0.00	$0.00	$285,690.00
Clean Fill	67,000	cu yd	$4.00	$268,000	$3.04	$203,680	$17.23	$1,154,410	$1,626,090.00
Compaction	53,500	cu yd	$0.91	$48,685	$0.25	$13,375	$0.00	$0.00	$62,060.00
Off-site Disposal									
TSCA Waste	56,000	ton	$0.00	$0.00	$0.00	$0.00	$157.00	$8,792,000.00	$8,792,000.00
- Requiring Treatment	19,000	ton	$0.00	$0.00	$0.00	$0.00	$220.00	$4,180,000.00	$4,180,000.00
Non-TSCA Waste	16,500	ton	$0.00	$0.00	$0.00	$0.00	$70.00	$1,155,000.00	$1,155,000.00
-Requiring Treatment	0	ton	$0.00	$0.00	$0.00	$0.00	$155.00	$0.00	$0.00
Capacitor Disposal Area	10,400	ton	$0.00	$0.00	$0.00	$0.00	$270.00	$2,808,000.00	$2,808,000.00
-Requiring Treatment	600	ton	$0.00	$0.00	$0.00	$0.00	$220.00	$132,000.00	$132,000.00
								Total Direct Construction Costs (TDCC)	$33,087,249.40
								Area Code 07080 Factor @ 10%	3,308,724.94
								TDCC Subtotal	36,395974.34
								Contingency at 20% of TDCC Subtotal	$7,279,194.87
								Engineering and Construction Management of TDCC Subtotal	$5,545,396.15
								Legal and Administrative at 5% of TDCC Subtotal	$1,819,798.72
								Total Construction Cost	$51,040,364.08
								Equipment Maintenance	$426,660.00
								Annual O&M	$43[illegible],970.42
								Total Present Worth	$62,291,761.37

TABLE 11

Chemicals Detected in Groundwater Samples

Analyte	Minimum Detected Concentration (ppb)	Maximum Detected Concentration (ppb)	Frequency
Volatile Organic Compounds			
Vinyl chloride	9	160	3/12
cis-1,2-Dichloroethylene	2	190,000	12/12
Trichloroethylene	17	120,000	12/12
Tetrachloroethylene	12	520	3/12
1,2,4-Trichlorobenzene	1200	1200	1/12
Semi-Volatile Organic Compounds			
Naphthalene	5	5	1/12
bis(2-Ethylhexyl) phthalate	1	1	1/12
Pesticides and PCBs			
beta-BHC	.016	.016	1/12
delta-BHC	.074	.074	1/12
Aldrin	.022	1.3	9/12
Aroclor 1232	.53	80	9/12
Aroclor 1254	4.1	9.2	4/12
Inorganics			
Aluminum	37.3	747	12/12
Antimony	3	3	1/12
Arsenic	3.4	3.4	1/12
Barium	79.4	1,570	12/12
Beryllium	.21	.33	8/12
Calcium	39,700	128,000	12/12
Chromium	3.8	18	10/12
Cobalt	.66	2.7	7/12
Copper	2.2	36.9	12/12
Cyanide	1.2	5.6	6/12
Iron	76.7	1,190	12/12

Analyte	Minimum Detected Concentration (ppb)	Maximum Detected Concentration (ppb)	Frequency
Magnesium	7,800	20,100	12/12
Manganese	36.4	1,580	12/12
Nickel	5.1	42	12/12
Potassium	1,080	5,930	12/12
Selenium	4.5	4.5	1/12
Sodium	13,100	43,800	12/12
Vanadium	1.3	8.5	12/12
Zinc	1.5	44.6	8/12

APPENDIX III

ADMINISTRATIVE RECORD INDEX

CORNELL DUBILIER ELECTRONICS, INC.
OPERABLE UNIT TWO
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

1.0 SITE IDENTIFICATION

1.3 Preliminary Assessment Reports

P. 100001 - 100055 Letter to Mr. Nick Magriples, CHMM, On-scene Coordinator, Removal Action Branch, U. S. EPA, from Ms. Lara Coraci, Assistant to the President, DSC of Newark Enterprises, Inc., re: Enclosed Preliminary Assessment Report as submitted to the NJDEP, April 3, 1996. (Attachment: Report: Preliminary Assessment Report, Hamilton Industrial Park, 333 Hamilton Boulevard, South Plainfield, NJ, prepared by ENSA Environmental, Inc., prepared for Norpak Corporation, May, 1995.)

2.0 REMOVAL RESPONSE

2.1 Sampling and Analysis Plans

P. 200001 - 200011 Letter (with attachment) to Muthu S. Sundram, Esquire, Assistant Regional Counsel, New Jersey Superfund Branch, U. S. EPA Region 2, from Mr. Robert S. Sanoff, Foley, Hoag & Eliot LLP, re: Cornell-Dubilier Electronics, Inc., Hamilton Industrial Park, South Plainfield, New Jersey, January 21, 1998. (Attachment: Letter to Mr. Mark Nielson, P. E., Environ Corporation, from Mr. William R. Goudy, Project Manager, InfraTech International, re: Proposal for Remedial Actions, Cornell Dubilier Electronics, Inc., March 9, 1998.)

2.2 Sampling and Analysis data/Chain of Custody Forms

P. 200012 - 200028 Memorandum to Ms. Sella Burchette, U. S. EPA/ERTC Work Assignment Manager, from Mr. Kenneth Robbins, REAC Task Leader, Roy F. Weston, Inc., re: Document transmittal under Work Assignment 1-262, May 30, 1997. (Attachment: Report: Final Report Wipe Sampling, Cornell Dubilier Electronics, South Plainfield, NJ, prepared by Roy F. Weston, Inc., prepared for U. S. EPA/ERTC, May 30, 1997.)

P. 200029 - 200062 Report: Analytical Report, Cornell Dubilier Electronics, South Plainfield, NJ, prepared by Roy F. Weston, Inc., prepared for U. S. EPA Region 2, August 28, 1997.

P. 200063 - 200104 Letter (with attachments) to Muthu Sundram, Esq., U. S. EPA Region 2, from Mr. Daniel J. Sheridan, Spadaccini, Main & Sheridan, LLC, re: Cornell Dubilier Electronics Site - Interior PCB Contamination Issues, October 17, 2000.

3.0 REMEDIAL INVESTIGATION

3.3 Work Plans

Plan: Final Work Plan for Remedial Investigation/ Feasibility Study, Cornell Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, prepared by Foster Wheeler Environmental Corporation, prepared for U.S. EPA, Region II, March 2000. (Note: This document is incorporated into this Administrative Record by reference. It can be found in the Cornell-Dubilier Administrative Record for OU1 pages 300001-300672.)

3.4 Remedial Investigation Reports

Report: Final Pathways Analysis Report for Remedial Investigation/Feasibility Study, Cornell Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, prepared by Foster Wheeler Environmental Corporation, prepared for U.S. EPA, Region II, May 2000. (Note: This document is incorporated into this Administrative Record by reference. It can be found in the Cornell-Dubilier Administrative Record for OU1, pages 300673-300723.)

P. 300001 - 300990 Report: Final Remedial Investigation Report For Operable Unit 2 (OU-2), Facility Soils and Buildings For Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, Volume I of II, prepared by Foster Wheeler Environmental Corporation, prepared for U. S. EPA Region 2, December 2002.

P. 300991 - 302304 Report: Final Remedial Investigation Report For Operable Unit 2 (OU-2), Facility Soils and Buildings For Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, Volume II of II, prepared by Foster Wheeler Environmental Corporation, prepared for U. S. EPA Region 2, December 2002.

3.5 Correspondence

P. 302305 - 302306 Letter to Mr. Robert Sanoff, Foley, Hoag & Elliot, LLP, from Mr. Richard L. Caspe, Director, Emergency and Remedial Response Division, U. S. EPA Region 2, re: Cornell-Dubilier Electronics, Inc. Superfund Site, South Plainfield, New Jersey, January 6, 1999.

P. 302307 - 302307 Letter to Muthu Sundram, Esquire, New Jersey Superfund Branch, U. S. EPA Region 2, from Mr. Robert S. Sanoff, Foley, Hoag & Eliot LLP, re: Hamilton Park Industrial Park Site, February 11, 1999.

P. 302308 - 302311 Letter to Muthu Sundram, Esquire, New Jersey Superfund Branch, U. S. EPA Region 2, from Mr. Robert S. Sanoff, Counsel to CDE, and Mr. Michael P. Last, Counsel to Dana, Foley, Hoag & Eliot LLP, re: Hamilton Park Industrial Park Site, June 8, 2000.

P. 302312 - 302313 Letter to Muthu Sundram, Esquire, New Jersey Superfund Branch, U. S. EPA Region 2, from Ms. Monica E. Conyngham, Foley, Hoag & Eliot LLP, re: Hamilton Industrial Park, South Plainfield, NJ, October 20, 2000.

P. 302314 - 302323 Letter (with attachment) to Ms. Monica Conyngham, Foley, Hoag & Eliot; Michael P. Last, Esquire, Mintz, Levin, Cohn, Feris, Glovsky and Popeo, P.C.; and Robert Sanoff, Esquire, Foley, Hoag &

Eliot, from Mr. John Prince, Chief, Central New Jersey Remediation Section, U. S. EPA Region 2, re: Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, November 21, 2000. (Attachment: Hamilton Industrial Park Redevelopment Project, South Plainfield, New Jersey, Proposed Scope of Work for Remediation Planning, prepared by Environ, October 3, 2000.)

P.	302324 - 302325	Letter to Ms. Lara Coraci, Assistant to the President, D.S.C. of Newark Enterprises, Inc., from Mr. John Prince, Chief, Central New Jersey Remediation Section, U. S. EPA Region 2, re: Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, November 21, 2000.
P.	302326 - 302328	Letter to Mr. John Prince, Central New Jersey Remediation Section, U. S. EPA Region 2, from Ms. Monica E. Conyngham and Mr. Michael P. Last, Foley, Hoag & Eliot LLP, re: Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, December 7, 2000.
P.	302329 - 302330	Letter to Ms. Monica Conyngham, Foley, Hoag & Eliot; Michael P. Last, Esquire, Mintz, Levin, Cohn, Feris, Glovsky and Popeo, P.C.; and Robert Sanoff, Esquire, Foley, Hoag & Eliot, from Mr. John Prince, Chief, Central New Jersey Remediation Section, U. S. EPA Region 2, re: Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, December 2[illegible], 2000.
P.	302331 - 302333	Letter to Mr. Peter Mannino, Project Manager, U. S. EPA Region 2, from Mr. J. Mark Nielsen, P. E., Manager, Environ, re: Hamilton Industrial Park, South Plainfield, New Jersey, Superfund Redevelopment Initiative, December 22, 2000.
P.	302334 - 302339	Letter to Mr. John Prince, Chief, Central New Jersey Remediation Section, U. S. EPA Region 2, from Mr. Michael P. Last, Attorney for Dana Corporation, and Ms. Monica E. Conyngham, Attorney for Cornell-Dubilier Electronics, Inc., re: Hamilton Industrial Park, South Plainfield, New Jersey, January 26, 2001.

P. 302340 - 302342 Letter to Mr. Michael P. Last, Rackeman, Sawyer & Brewster, Attorneys for Dana Corporation, and Ms. Monica E. Cunningham, Foley, Hoag and Eliot, Attorneys for Cornell-Dubilier Electronics, Inc., from Muthu S. Sundram, Assistant Regional Counsel, U. S. EPA Region 2, re: response to letter dated January 26, 2001 to John Prince, Chief of the Central New Jersey Remediation Section, February 28, 2001.

P. 302343 - 302354 Letter (with attachment) to Mr. Peter Mannino, Project Manager, U. S. EPA Region 2, from Mr. J. Mark Nielsen, P.E., Manager, Environ, re: Cornell-Dubilier Electronics Superfund Site/Hamilton Industrial Park Pathways Analysis Report, March 9, 2001. (Attachments: (1) Preliminary Comments on the Pathways Analysis Report for Remedial Investigation/Feasibility Study, Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, March 9, 2001; and (2) E-mail message to Mark Nielsen, Environ, from Mr. Pietro Mannino, U. S. EPA Region 2, re: the Agency's response to comments on the Pathways Analysis Report for the Remedial Investigation/ Feasibility Study at the Cornell-Dubilier Electronics Superfund site, March 9, 2001.)

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001 - 400039 Report: Final Remedial Alternative Screening Technical Memorandum for Operable Unit 2 (OU2) On-Site Soils and Buildings, Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, prepared by Foster Wheeler Environmental Corporation, prepared for U. S. EPA Region 2, January 2003.

P. 400040 - 400087 Report: Draft Remedial Alternative Evaluation Technical Memorandum for Operable Unit 2 (OU2) On-Site Soils and Buildings, Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, prepared by Foster Wheeler Environmental Corporation, prepared for U. S. EPA Region 2, May 2003.

P. 400087A - 400292 - Report: <u>Final Feasibility Study Report for Operable Unit 2 (OU-2), Facility Soils and Buildings for Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey</u>, prepared by Tetra Tech FW, Inc., prepared for U. S. EPA, Region 2, April 2004.

4.6 Correspondence

P. 400293 - 400295 - Letter (with attachment) to Mr. Peter Mannino, Project Manager, U. S. EPA Region 2, from Mr. J. Mark Nielson, P. E., Manager, Environ, re: Cornell Dubilier Superfund Site/Hamilton Industrial Park, South Plainfield, New Jersey, FS Working Group, July 2, 2001. (Attachment: draft schedule for the Feasibility Study.)

P. 400296 - 400299 - Letter (with attachments) to Muthu S. Sundram, Esq. Assistant Regional Counsel, New Jersey Superfund Branch, U. S. EPA Region 2, from Mr. J. Mark Nielsen, P. E., Manager, Environ, re: Cornell-Dubilier Electronics Site, South Plainfield, New Jersey, Proposed Schedule for the On-site Building and Soils Operable Unit Feasibility Study, July 20, 2001.

P. 400300 - 400303 - Letter to Mr. Peter Mannino, Project Manager, U. S. EPA Region 2, from Mr. J. Mark Nielsen, P. E., Manager, Environ, re: Cornell-Dubilier Superfund - Operable Unit 2, Pre-draft RAGS Part D Risk Assessment Tables, March 21, 2002.

P. 400304 - 400305 - Letter to Sarah Flanagan, Esquire, U. S. EPA Region 2, from Mr. Michael P. Last, Attorney for Dana Corporation, and Ms. Kim I Stollar, Attorney for Cornell-Dubilier Electronics, Inc., Rackemann, Sawyer & Brewster, re: confirming recent conversation regarding the Stage 1A Cultural Resources Assessment work relating to the Cornell-Dubilier Electronics, Inc. Superfund Site, South Plainfield, New Jersey, December 19, 2002.

P. 400306 - 400308 - Letter to Michael P. Last, Esq., Rackemann, Sawyer & Brewster, and Kim I. Stollar, Esq., Foley, Hoag & Eliot, LP, from Sarah P. Flanagan, Assistant Regional Counsel, U. S. EPA Region 2, re: response to December 19, 2002 letter regarding Cornell-

Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, January 2, 2003.

P. 400309 - 400312 Letter to Mr. Peter Mannino, Project Manager, Emergency and Remedial Response Division, U. S. EPA Region 2, from Michael P. Last, Esq., Counsellor at Law, re: Operable Unit 2 (OU2) Feasibility Study for the Cornell-Dubilier Electronics Superfund Site ("Site"), South Plainfield, New Jersey, March 21, 2003.

P. 400313 - 400319 Letter (with attachments) to Mr. Peter Mannino, U. S. EPA Region 2, from Mr. J. Mark Nielsen, P. E., Manager, Environ, re: Remedial Alternative Screening Memorandum for the Operable Unit 2(OU2) Feasibility Study, Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, March 21, 2003. (Attachments: (1) Raymark Industries Site, Stratford, Connecticut, Key Elements of the Record of Decision, and (2) Press release: EPA Announces $56 Million in Savings at Six New England Superfund Sites.)

P. 400320 - 400321 Letter to Michael P. Last, Esq., Counsellor at Law, from Sarah P. Flanagan, Assistant Regional Counsel, U. S. EPA Region 2, re: response to letter dated March 21, 2003 concerning the Remedial Alternatives Screening Technical Memorandum for Operable Unit 2 ("OU2") at the Cornell-Dubilier Electronics ("CDE") Superfund Site, May 27, 2003.

P. 400322 - 400323 Letter to Mr. Mark Nielsen, P. E., Environ, from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, re: response to letter dated March 21, 2003 regarding Cornell-Dubilier Electronics Superfund site, South Plainfield, New Jersey, June 5, 2003.

P. 400324 - 400325 Letter to Michael P. Last, Esq., Counsellor at Law, and Kim I. Stollar, Esq., Foley Hoag LLP, from Sarah P. Flanagan, Assistant Regional Counsel, U. S. EPA Region 2, re: Cornell-Dubilier Electronics Superfund Site, Opportunity to Submit Comments to National Remedy Review Board, June 16, 2003.

P.	400326 - 400327	Letter to Ms. Lara Coraci, Assistant to the President, D.S.C. of Newark Enterprises, Inc., from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, U. S. EPA Region 2, re: Cornell-Dubilier Electronics Superfund Site, Opportunity to Submit Comments to National Remedy Review Board, June 17, 2003.
P.	400328 - 400349	Letter to National Remedy Review Board, U. S. Environmental Protection Agency, from Mr. J. Mark Nielsen, P. E., Manager, Environ, re: Hamilton Industrial Park Superfund Site, South Plainfield, New Jersey, July 16, 2003.
P.	400350 - 400351	Letter to National Remedy Review Board, U. S. Environmental Protection Agency, from Mr. Daniel Gallagher, Mayor, Borough of South Plainfield, re: Hamilton Industrial Park Superfund Site, South Plainfield, New Jersey, October 6, 2003.
P.	400352 - 400355	Memorandum to Mr. George Pavlou, Director, Emergency and Remedial Response Division, EPA Region 2, from Ms. JoAnn Griffith, Chair, National Remedy Review Board, U. S. EPA, re: National Remedy Review Board Recommendations for the Cornell-Dubilier Electronics Superfund Site, October 8, 2003.
P.	400356 - 400361	Letter (with attachment) to Mr. Peter Mannino, U. S. EPA Region 2, from Mr. J. Mark Nielsen, P. E., Consulting Engineer, and Mr. Michael P. Scott, Principal, Environ, re: Hamilton Industrial Park Site - Preliminary Risk-Based Assessment of Removal-Based Remedies for OU2 Soils, January 13, 2004. (Attachment: Hamilton Industrial Park, Preliminary Evaluation of OU2 Soil Excavation Alternatives.)
P.	400362 - 400362	Letter to Mr. J. Mark Nielsen, P. E., Consulting Engineer, Environ, from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, re: response to letter dated January 13, 2004 regarding Cornell-Dubilier Electronics Superfund site, South Plainfield, New Jersey, January 29, 2004.
P.	400363 - 400366	Memorandum to Ms. JoAnn Griffith, Chair, National Remedy Review Board, U. S. EPA, from Mr. John S.

Frisco, Manager, Superfund Remedial Program, EPA-Region 2, re: National Remedy Review Board Recommendations, Cornell-Dubilier Electronics Superfund Site, February 6, 2004.

P. 400367 - 400368 Letter to Mr. George Pavlou, Director, Emergency and Remedial Response, U. S. EPA Region 2, from Michael P. Last, Esq., Counsellor at Law, re: Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, April 1, 2004.

P. 400369 - 400372 Letter to Mr. Peter Mannino, U.S. EPA Region 2, from Mr. J. Mark Nielsen, P. E., Consulting Engineer, and Mr. Michael P. Scott, Principal, Environ, re: Response to Questions Regarding Hamilton Industrial Park Group's Proposed Remedial Alternative for Operable Unit No. 2, Hamilton Industrial Park Site, South Plainfield, New Jersey, April 1, 2004.

P. 400373 - 400374 Letter to Michael P. Last, Esq., Counsellor at Law, from Mr. George Pavlou, Director, Emergency and Remedial Response Division, U. S. EPA Region 2, re: response to letter dated April 1, 2004, regarding the Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, April 23, 2004.

7.0 ENFORCEMENT

7.3 Administrative Orders

Letter to D.S.C. of Newark Enterprises, Inc., c/o Michael Colfield, Esq., from Muthu S. Sundram, Esq., Assistant Regional Counsel, U.S. EPA, Region II, re: Cornell Dubilier Electronics Site, South Plainfield, Middlesex County, N.J., EPA Order Index Number II-CERCLA-97-0109, undated. (Attachment: Administrative Order in the Matter of: Cornell-Dubilier Electronic Site, South Plainfield, New Jersey, D.S.C. of Newark Enterprises, Inc., Respondent, Index No: II CERCLA-97-0109, prepared by U.S. EPA, Region II, March 25, 1997.) (Note: This document is incorporated into this Administrative Record by reference. It can be found in the Cornell-Dubilier Administrative Record for OU1, pages 700001-700020.)

P. 700001 - 700010 Letter (with attachment) to Dr. Muthu Sundram, New Jersey Superfund Branch, Office of Regional Counsel - Region II, U. S. EPA, from Ms. Ellyn R. Weiss, re: 333 Hamilton Boulevard, South Plainfield, New Jersey, Cornell-Dubilier Electronics, Inc., November 13, 1997. (Attachment: Response to USEPA Draft AOC for Removal Action and Proposed Remediation Goals for Building Interiors at the Hamilton Industrial Park, South Plainfield, New Jersey, prepared by Environ Corporation, prepared for Foley, Hoag & Eliot and Cornell-Dubilier Electronics, Inc., November 1997.)

P. 700011 - 701003 Report: Site Summary Report, EPA Order Index No. 11-CERCLA-97-109, Hamilton Industrial Park, 333 Hamilton Boulevard, South Plainfield, NJ, prepared by Mr. Joseph Lockwood, Environmental Compliance Coordinator, D.S.C. of Newark Enterprises Incorporated, February 2004.

7.7 Notice Letters and Responses - 104e's

P. 701004 - 701020 Letter to Mr. James R. Kaplan, President, Cornell-Dubilier Electronics, Inc., from Mr. Richard L. Caspe, Director, Emergency and Remedial Response Division, U. S. EPA, Region 2, re: Cornell-Dubilier Electronics Site, Hamilton Industrial Park, 333 Hamilton Boulevard, South Plainfield, Middlesex County, New Jersey, Request for Information Pursuant to Comprehensive Environmental Response, Compensation and Liability Act, 42, U.S.C. §§9601-9675, September 10, 1996.

P. 701021 - 701028 Letter to Muthu Sundram, Esq., New Jersey Superfund Branch, Office of Regional Counsel, U. S. EPA Region 2, from Ms. Lara Coraci, Assistant to the President, DSC of Newark Enterprises, Inc., re: Cornell-Dubilier Electronics Site, Hamilton Industrial Park, 333 Hamilton Boulevard, South Plainfield, Middlesex County, New Jersey, response to Request for Information, October 8, 1996.

P. 701029 - 701037 Letter to Muthu Sundram, Esq., New Jersey Superfund Branch, Branch Office of Regional Counsel, U. S. EPA, Region 2, from Ms. Lisa A. Wurster, Legal Counsel, Dana Corporation, re:

Cornell-Dubilier Electronics Site, Hamilton Industrial Park, South Plainfield, New Jersey, October 15, 1996.

P. 701038 - 701165 Cornell-Dubilier Electronics, Inc., Response to EPA's Request for Information, re: Hamilton Industrial Park, South Plainfield, Middlesex County, NJ, prepared by Foley, Hoag & Eliot, LLP, prepared for U. S. EPA Region 2, November 7, 1996.

P. 701166 - 701170 Letter to Muthu Sundram, Esq., New Jersey Superfund Branch, Branch Office of Regional Counsel, U. S. EPA, Region 2, from Ms. Lisa A. Wurster, Legal Counsel, Dana Corporation, re: 104(e) Request for Information, Cornell-Dubilier Electronics Site, Hamilton Industrial Park, South Plainfield, New Jersey, January 21, 1997.

P. 701171 - 701231 Letter (with attachment) to attached list of addressees from Mr. Richard L. Caspe, Director, Emergency and Remedial Response Division, U. S. EPA Region 2, re: General Notice Letter and Notice of Negotiations for Remedial Investigation/ Feasibility Study; Cornell-Dubilier Electronics, Inc. Site ("Site"), Town of South Plainfield, Middlesex County, New Jersey, July 22, 1998. (Attachment: U. S. EPA Region 2 Administrative Order On Consent for Remedial Investigation/ Feasibility Study, In the Matter of The Cornell-Dubilier Electronics, Inc. Site, Cornell-Dubilier Electronics, Inc.; Federal Pacific Electric Company; D. S. C. of Newark Enterprises, Inc., Dana Corporation; Dana Corporation Foundation, Respondents, Proceeding under Sections 104 and 122 of the Comprehensive Environmental Response, Compensation and Liability Act, as amended, 42 U.S.C. §§ 9604, 9622, undated.)

8.0 HEALTH ASSESSMENTS

8.1 ATSDR Health Assessments

Report: <u>Public Health Assessment for Cornell Dubilier Electronics Incorporated, South Plainfield, Middlesex County, New Jersey</u>, prepared by New Jersey Department of Health and Senior Services, Hazardous Site Health Evaluation Program, Consumer and Environmental Health

Services, Division of Epidemiology, Environmental and Occupational Health, Under a Cooperative Agreement with the U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, September 20, 2000. (Note: This document is incorporated into this Administrative Record by reference. It can be found in the Cornell-Dubilier Administrative Record for OU1, pages 800059-800177.)

P. 800001 - 800012 Report: Health Consultation, Cornell Dubilier Electronics Incorporated, South Plainfield, Middlesex County, New Jersey, EPA Facility ID: NJD981557879, prepared by U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Division of Health Assessment and Consultation, November 20, 2000.

10.0 PUBLIC PARTICIPATION

10.1 Comments and Responses

P. 10.00001- 10.00024 Letter to Ms. Jeanne Fox, Administrator, U. S. EPA Region 2, from Mr. Robert Spiegel, Executive Director, Edison Wetlands Association, Inc., re: Enclosed September 30, 1999, EWA Site Inspection report for the Cornell-Dubilier Superfund Site, South Plainfield, NJ, September 29, 1999.

P. 10.00025- 10.00028 Letter to Mr. Robert Spiegel, Edison Wetlands Association, Inc., from Mr. Richard L. Caspe, Director, Emergency and Remedial Response Division, U. S. EPA Region 2, re: response to September 29, 1999 letter, November 4, 1999.

P. 10.00029- 10.00042 Letter (with enclosures) to Mr. Robert Spiegel, Edison Wetlands Association, Inc., from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, U. S. EPA Region 2, re: response to the Edison Wetlands Association (EWA) follow-up Site Inspection Report for the Cornell-Dubilier Electronics Superfund site, located in South Plainfield, New Jersey, March 28, 2001.

P. 10.00043- 10.00066 Letter (with attachment) to Mr. Anthony Valaquez, Hill Wallack, Attorneys At Law, from Mr. Vincent Buttiglieri, Municipal Clerk, Borough of South Plainfield, re: enclosed certified copy of Ordinance #1597, approving the Redevelopment Plan for the Hamilton Boulevard Industrial Site, July 16, 2002.

P. 10.00067- 10.00093 Letter (with attachments) to Muthu Sundram, Esq., Assistant Regional Counsel, U. S. EPA Region 2, from Mr. Michael P. Last and Ms. Monica E. Conyngham, Rackemann, Sawyer & Brewster, re: update with respect to the status of the redevelopment efforts affecting the Hamilton Industrial Park Site, South Plainfield, New Jersey, August 7, 2002.

P. 10.00094- 10.00098 Letter (with attachment) to Muthu Sundram, Esquire, Assistant Regional Counsel, U. S. EPA Region 2, from Mr. Michael P. Last, Rackemann, Sawyer & Brewster, re: enclosed Statement of Interest from a redeveloper which has been received in connection with the Hamilton Industrial Park Site, September 10, 2002.

P. 10.00099- 10.00100 Letter to Ms. Jane M. Kenny, Regional Administrator, U. S. EPA Region 2, from Mayor Daniel J. Gallagher, Borough of South Plainfield, re: moving forward with the redevelopment of the Hamilton Boulevard Industrial Site, October 9, 2002.

P. 10.00101- 10.00140 Letter (with attachments) to Muthu Sundram, Esquire, Assistant Regional Counsel, U. S. EPA Region 2, from Mr. Michael P. Last and Ms. Monica E. Conyngham, Rackemann, Sawyer & Brewster, re: Cornell-Dubilier Electronics Superfund Site (Hamilton Industrial Park), South Plainfield, New Jersey, October 10, 2002.

P. 10.00141- 10.00143 Letter to Michael P. Last, Esq., Rackemann, Sawyer & Brewster, from Mr. Vincent Buttiglieri, Administrator/Municipal Clerk, Borough of South Plainfield, re: attached copy of a letter sent by Mayor Daniel J. Gallagher to Ms. Jane M. Kenny, Regional Administrator for the U. S. EPA, October 14, 2002.

P. 10.00144- 10.00144 Letter to Mayor Daniel J. Gallagher, Mayor, Borough of South Plainfield, from Mr. George Pavlou, Director, Emergency & Remedial Response Division, U. S. EPA Region 2, re: Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, response to October 9, 2002 letter to Ms. Jane M. Kenny, U. S. EPA Region 2 Administrator, October 31, 2002.

P. 10.00145- 10.00146 Letter to Mr. Peter Mannino, Project Manager, U. S. EPA Region 2, from Mr. Robert Spiegel, Executive Director, Edison Wetlands Association, Inc., re: Cornell-Dubilier Electronics Superfund Site, February 3, 2003.

P. 10.00147- 10.00147 Letter to Mr. Peter Mannino, Project Manager, U. S. EPA Region 2, from Senator Barbara Buono, New Jersey Senate, re: Cornell-Dubilier Superfund site in South Plainfield, February 5, 2003.

P. 10.00148- 10.00150 Letter to Mr. Robert Spiegel, Executive Director, Edison Wetlands Association, Inc., from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, U. S. EPA Region 2, re: response to letter dated February 3, 2003 concerning the Cornell-Dubilier Electronics (CDE) Superfund Site located in South Plainfield, New Jersey, March 11, 2003.

P. 10.00151- 10.00153 Letter to Senator Barbara Buono, New Jersey Senate, from Ms. Jane M. Kenny, Regional Administrator, U. S. EPA Region 2, re: response to letter of February 5, 2003 to Mr. Peter Mannino, remedial project manager, concerning the Cornell-Dubilier Electronics (CDE) Superfund site located in South Plainfield, New Jersey, February 25, 2003.

10.2 Community Relations Plans

P. 10.00154- 10.00203A Report: Final Community Relations Plan for Remedial Investigation/Feasibility Study, Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, prepared by Foster Wheeler Environmental Corporation, prepared for U. S. EPA, Region 2, August 2000.

10.3 Public Notices

P. 10.00204- 10.00207 Letter (with enclosure) to Resident from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, re: Public Information Session for the Cornell-Dubilier Electronics Superfund Site, January 16, 2003.

P. 10.00208- 10.00211 Letter (with enclosure) to Michael P. Last, Esq., Rackemann, Sawyer & Brewster; Kim I. Stollar, Esq., Foley Hoag LLP; and Mr. Howard T. Weir, Morgan, Lewis & Bockius LLP, from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, re: Public Information Session for the Cornell-Dubilier Electronics Superfund Site, January 21, 2003.

P. 10.00212- 10.00215 Letter (with enclosure) to Michael P. Last, Esq., Rackemann, Sawyer & Brewster; Kim I. Stollar, Esq., Foley Hoag LLP; and Mr. Howard T. Weir, Morgan, Lewis & Bockius LLP, from Mr. Peter Mannino, Remedial Project Manager, Central New Jersey Remediation Section, re: Public Information Session for the Cornell-Dubilier Electronics Superfund Site, May 30, 2003.

10.6 Fact Sheets and Press Releases

P. 10.00216- 10.00216 Newspaper Article: "Stores planned at tainted S. Plainfield site", by Ms. Towanda Underdue, The Star Ledger, July 11, 2000.

P. 10.00217- 10.00217 Newspaper Article: "South Plainfield proposal a model brownfields plan", Home News Tribune, Opinion, July 17, 2000.

P. 10.00218- 10.00219 Newspaper Article: "South Plainfield: Brownfields idea backed", by Ms. Rosa Cirianni, Home News Tribune, August 9, 2000.

P. 10.00220- 10.00221 Newspaper Article: "South Plainfield: Industrial park contaminants threat to workers", by Ms. Rosa Cirianni, Home News Tribune, January 13, 2001.

P. 10.00222- 10.00222 Newspaper Article: "Cornell-Dubilier site addressed", by Ms. Cheryl Orson, The South Plainfield Reporter, April 20, 2001.

P. 10.00223- 10.00225 Newspaper Article: "Superfund site-'to be continued', Officials get latest update on the Cornell-Dubilier site", by Ms. Cheryl Orson, The South Plainfield Reporter, April 27, 2001.

P. 10.00226- 10.00226 Newspaper Article: "Planning Board Approves Plan for Industrial Site", South Plainfield Observer, October 19, 2001.

P. 10.00227- 10.00228 Newspaper Article: "Council to vote on Superfund site plan", by Mr. Tom Haydon, The Star-Ledger, December 5, 2001.

P. 10.00229- 10.00230 Newspaper Article: "Town moves ahead with redevelopment, Mixed uses are foreseen for Hamilton Blvd. Superfund site", by Ms. Cheryl Orson, The South Plainfield Reporter, June 28, 2002.

P. 10.00231- 10.00231 Newspaper Article: "Hamilton Boulevard Redevelopment Plan Advances", South Plainfield Observer, July 19, 2002.

P. 10.00232- 10.00232 Newspaper Article: "Information Session for Cornell-Dubilier Site Next Monday", South Plainfield Observer, June 6, 2003.

P. 10.00233- 10.00234 Newspaper Article: "Cleanup angers firm's owner, PCB focus on woman's home draws outrage", by Ms. Sarah Greenblatt, Home News Tribune, undated.

P. 10.00235- 10.00236 Newspaper Article: "Report notes high risk at contaminated S. Plainfield site", by Mr. Joe Tyrrell, The Star Ledger, undated.

APPENDIX IV

STATE CONCURRENCE LETTER

State of New Jersey

Department of Environmental Protection

m- E. McGreevey
vernor

Bradley M. Campbell
Commissioner

Ms. Jane Kenny
Regional Administrator
Region 2
290 Broadway
New York, N.Y. 10007-1866

SEP 30 2004

Dear Administrator Kenny:

The New Jersey Department of Environmental Protection has evaluated, and concurs with the following specific components of the selected remedy for Operable Unit One (OU-2) at the Cornell-Dubilier Electronics Site (CDE) as stated below:

- A combination of excavation and off site disposal at a TSCA-regulated landfill and on-site treatment using Low Temperature Thermal Desorption(LTTD) of soils containing PCBs at concentrations greater than 500 ppm, and contaminated soils that exceed New Jersey's IGWSCC (approximately 114,500 cubic yards) . Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped by use of a multi-layer cap. Soils containing PCBs greater than New Jersey's non-residential direct contact soil cleanup criterion of 2 ppm would be subject to engineering and institutional controls. The total area to be capped is approximately 20 acres.

- Demolition of on-site buildings and off-site disposal of approximately 22,000 tons of debris with a contingency which would allow for decontamination and encapsulation of certain buildings. Institutional controls would be employed for any structures that are not demolished.

- Relocation of some or all of the tenants pursuant to the Uniform Relocation Act.

The State of New Jersey appreciates the opportunity to participate in the decision making process and looks forward to working cooperatively with USEPA to complete the remediation in a timely manner.

Sincerely yours,

Gary Sondermeyer for

Bradley M. Campbell
Commissioner

APPENDIX V

RESPONSIVENESS SUMMARY
CORNELL-DUBILIER ELECTRONICS SUPERFUND, INC. SITE
OPERABLE UNIT TWO

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and concerns regarding the Proposed Plan for the Cornell-Dubilier Electronics, Inc. Site, and EPA's responses to those comments. At the time of the public comment period, EPA proposed a preferred alternative for remediating soils and buildings at the former Cornell-Dubilier Electronics facility, which has been designated Operable Unit 2 (OU2). All comments summarized in this document have been considered in EPA's final decision for the selection of a remedial alternative for OU2.

This Responsiveness Summary is divided into the following sections:

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS: This section provides the history of community involvement and interests regarding the Cornell-Dubilier Electronics Site.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS AND RESPONSES: This section contains summaries of oral comments received by EPA at the public meeting, EPA's responses to these comments, as well as responses to written comments received during the public comment period.

The last section of this Responsiveness Summary includes attachments, which document public participation in the remedy selection process for this Operable Unit. They are as follows:

Attachment A: the Proposed Plan that was distributed to the public for review and comment;

Attachment B: the public notices that appeared in Observer-Tribune and the Courier-News;

Attachment C: the transcript of the public meeting; and

Attachment D: the written comments received by EPA during the public comment period.

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

Since the first public information session for this Site was held by EPA on June 19, 1997, the level of community involvement and concern with the Site has been high. EPA has conducted an extensive community relations program to meet the community's need for information and to support community participation in seeking remedies for the Site. Since 1997, EPA has held one-on-one meetings and public information sessions with area residents and tenants at the industrial park to explain the findings of the investigation and the sampling results for their properties. In addition to the public participation responsibilities associated with developing the OU1 and OU2 remedies, EPA has provided the community with fact sheets on the Site.

Based on the high level of community interest from nearby residents, public officials, a local environmental group, and the PRPs, and in light of the interest on the part of the Borough in redeveloping the Hamilton Industrial Park, EPA initiated its public outreach efforts for OU2 during the FS stage, through a series of informal public information sessions held in South Plainfield. All-day meetings were held in January 2003, before the start of the FS, to present data from the RI report and explain in more detail the Superfund process, and in June 2003, while EPA was developing remedial alternatives for the FS. These meetings were well attended, and gave interested parties an opportunity to meet with EPA, learn about the Site, hear of the remedial options available, and provide informal feedback to the agency. EPA also used these meetings as an opportunity to clarify the scope of the planned redevelopment as envisioned by elected officials and others.

EPA's Proposed Plan for OU2 was released to the public on July 6, 2004 and, starting that same day, EPA initiated a public comment period to solicit community input and ensure that the public remains informed about Site activities. On June 30, 2004 a copy of the Proposed Plan was mailed to approximately 510 individuals on a mailing list maintained by EPA for the Site. A copy of the Proposed Plan and supporting documentation was placed in the Administrative Record and was made available in the information repositories maintained at the EPA Region II office (290 Broadway, New York, New York) and at the South Plainfield Public Library (2484 Plainfield Avenue, South Plainfield, New Jersey). Public notices were published in local newspapers The Courier-News on July 6, 2004 and The Observer-Tribune on July 9, 2004, advising the public of the availability of the Proposed Plan. The notices also announced the opening of a public comment period on July 6, 2004 and invited all interested parties to attend an upcoming public meeting. The public comment period was initially scheduled to end on August 5, 2004, but was extended, by the publication of an additional public notice in The Courier-News to September 4, 2004.

A public meeting to present the preferred remedial alternative for OU2 was held at the South Plainfield Municipal Building, 2480 Plainfield Avenue, South Plainfield, New Jersey on July 13, 2004.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS, AND RESPONSES

PART 1: Verbal Comments

This section summarizes comments received from the public during the public comment period, and EPA's responses.

A. SUMMARY OF QUESTIONS AND EPA's RESPONSES FROM THE PUBLIC MEETING CONCERNING OU2 OF THE CORNELL-DUBILIER ELECTRONICS SITE - JULY 13, 2004

A public meeting was held July 13, 2004, at 7:00 p.m. at the South Plainfield Municipal Building, 2480 Plainfield Avenue, South Plainfield, New Jersey. Following a brief presentation of the investigation findings, EPA presented the Proposed Plan and preferred alternative for OU2 of the Cornell-Dubilier Electronics, Inc. Site, received comments from interested citizens, and responded to questions regarding the remedial alternatives under consideration.

Comments and questions raised by the public following EPA's presentation are categorized by relevant topics and presented as follows:

a. Health and Exposure Concerns
b. Remedial Action Objectives
c. Extent of Contamination
d. Public Acceptance and Short-term Effectiveness
e. Operable Unit 1
f. Bound Brook
g. Costs

a. Health and Exposure Concerns

Comment #1: Several residents asked whether any studies have been performed that illustrate the effects that the contaminants found at the Site have had on people that reside in the community.

EPA Response: Cancer epidemiological studies can be performed by the New Jersey Department of Health and Senior Services (NJDHSS). NJDHSS maintains tumor registries for the State of New Jersey, at the county level, that allow for the evaluation of cancer rates and changes in rates over time. These activities are performed by NJDHSS on an on-going basis. EPA will coordinate with NJDHSS epidemiologists and the community to disseminate any information available.

In addition, as part of the Remedial Investigation (RI) for OU2, EPA performed a baseline human health risk assessment (BHHRA). As part of the BHHRA, EPA evaluated the toxicity for each of the chemicals detected at the Site and calculated the reasonable maximum exposure (RME) for each population potentially exposed at the Site. The current and future RME individuals evaluated in the BHHRA included trespassers and commercial/industrial workers. The toxicity and exposure information is presented in the BHHRA.

Comment #2: A resident expressed frustration that EPA cannot determine conclusively whether the Site is adversely affecting people; neither can EPA determine whether EPA's proposed remedy would successfully eliminate the hazard that is affecting people.

EPA Response: EPA is not a health agency and dose not possess the expertise to do such studies. Consistent with EPA's risk assessment guidance and policies, the BHHRA conducted for the Site evaluated risks under current and future land uses in the absence of remedial action or institutional controls. EPA's BHHRA evaluates whether current or future Site uses might result in unacceptable exposures to contamination, but it does not entail epidemiological studies of nearby residents or building tenants to evaluate actual exposures or resultant health effects. The BHHRA concluded that the Site does pose unacceptable risks to human health and the environment, prompting EPA to evaluate remedies for the Site.

Comment #3: Numerous residents voiced their concern over the large number of cases of cancer that appear to be concentrated in South Plainfield and questioned why a study has not been performed.

EPA Response: As indicated in response to comment #1, above, NJDHSS maintains a tumor registry for the State of New Jersey. Hospitals and physicians report cancer cases to this registry. NJDHSS evaluates the data at a county level and publishes the results of epidemiological studies that evaluate change in rates of disease and provide comparisons of county level data to state- and county-wide averages. This information is published annually and the latest report is available at www.state.nj.us/health/cancer/statistics.

Comment #4: Several residents raised concerns that the registry does not contain information for each individual town, rather, the registry records information at the county level.

EPA Response: EPA will work with NJDHSS and the community to provide any information that is available. Typically, data is evaluated and presented at a county level to protect the confidentiality of the patients in the registry.

Comment #5: A resident asked what the units are for the non-cancer risks.

EPA Response: The Hazard Index (HI) represents the sum of several Hazard Quotients that are a comparison of the exposure level presented in units of milligram/kilogram-day (mg/kg-day) divided by the non-cancer Reference Dose for the individual chemicals, which is also in units of mg/kg-day. The division of these two values cancels out the units and, therefore, the HI does not have units.

Comment #6: The same resident asked whether an HI of 11 is a big number.

EPA Response: EPA has developed a threshold level of 1 for non-cancer health effects. Values greater than 1 indicate an increase in potential for non-cancer health effects to occur. However, the HI does not predict a specific disease.

Comment #7: The same resident doubted that a fence could protect children from toxic materials, because the Site poses an attractive nuisance for trespassing.

EPA Response: The security measures currently in place at OU2 are temporary measures to restrict access to the facility, and are generally successful at limiting access. Signs are also posted at the facility. To date, these measures have been effective in reducing trespasser activity at the facility.

Comment #8: A resident asked whether the risk assessment takes into consideration the cumulative effects of various contaminants at the Site on the nervous system.

EPA Response: Although PCBs were the primary contributor to the risk, the health effects from each of the chemicals detected at the Site were also evaluated in the BHHRA. The selection of the critical health effect for a specific chemical is based on an evaluation of human epidemiological studies and animal studies. These studies provide a range of health effects at various dose levels and the most sensitive effect is selected as the critical effect for that chemical. As part of the risk assessment, a cancer risk and non-cancer hazard index are calculated for each chemical of potential concern (COPC) at the Site. The risk assessment combines the toxicity information with the exposure information to develop cancer risk and non-cancer hazards. In developing the reasonable maximum exposure and central tendency exposure scenarios, the individual cancer risk and non-cancer hazard index for each COPC are calculated and then are combined. Results of the BHHRA are found in Section 6 of the RI for OU2. Page 6-23 of the RI Report specifically identifies neurotoxicity (effects on nervous system) as a "major effect" category that was evaluated in the non-cancer health assessment.

Comment #9: A resident requested that the EPA supply the community with a list of chemicals that have been found on the Site and the studies that were used to assess the harm from each of those chemicals to the hormone system, nervous system, immune system and the reproductive system.

EPA Response: The information requested is identified in the Risk Assessment for OU2 in Tables 5.1 and 6.1 and in the Lead Worksheets, which are located in Appendix O of the RI Report. In addition, the summary of the toxicity studies is available on EPA's Integrated Risk Information System, which is available at www.epa.gov/iris. A copy of the risk assessment is included in the Administrative Record for the Site, as part of the RI Report. A copy of the Administrative Record is located at the South Plainfield Public Library and at the EPA Records Center.

Comment #10: A resident asked whether the risk assessment takes into consideration the toxic affect of the combination of PCB's, chromium, chlorethene, lead, plus "defiltration", and second-hand smoke; in other words, the kinds of things that elderly people are routinely exposed to in their daily lives and that this Site would be adding onto.

EPA Response: Consistent with EPA policy, the BHHRA does not account for risks associated with background influences, such as second-hand smoke. The development of EPA's toxicity values are designed to be protective of sensitive sub-populations, including children. The BHHRA also calculated total risks by adding together the cancer risks and non-cancer health hazards from the individual chemicals. EPA's Risk Assessment guidance allows for evaluation of special sub-populations such as children or the elderly. EPA evaluated sensitive sub-populations, such as the youth trespasser who would be exposed on a more frequent basis than the young child or adult. OU2 of the Site posed unacceptable risks even to the adolescent and adult workers.

Comment #11: A resident raised a concern that people who used to live in the community may not know about the contamination at the Site.

EPA Response: EPA will continue its efforts to disseminate information about the Site to the community.

b. Remedial Action Objectives

Comment #12: A resident asked whether the former capacitor disposal area will be excavated or paved.

EPA Response: EPA's Preferred Alternative will require the excavation of the capacitor disposal area, and off-site disposal of the debris found therein.

Comment #13: A resident asked which areas of the facility soils would be excavated.

EPA Response: Figure 5 of the Proposed Plan identifies the areas containing soils exceeding the Remediation Goals for OU2 of the Site. EPA's Preferred Alternative called for excavation of the capacitor disposal area, contaminated soil containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria for contaminants other than PCBs.

Comment #14: A resident asked for clarification of the different shaded areas identified in Figure 5 of the Proposed Plan.

EPA Response: The areas of PCB contamination in soil greater than 500 ppm and other chemicals of potential concern greater than New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) are shaded in Figure 5 of the Proposed Plan. Additional sampling will be needed during the remedial design to determine the actual areal extent and depth of excavation for removal of contaminated soil. In addition, post-excavation sampling would be conducted to ensure that the cleanup goals are achieved.

Comment #15: A resident asked for clarification of the difference in volume of soil that would be addressed in Alternative S-2 versus the other soil alternatives.

EPA Response: Under Alternative S-2, an estimated 278,500 cubic yards of contaminated soil would be addressed. This alternative addresses soils containing PCBs at concentrations greater than 10 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminants other than PCBs. Under Alternatives S-3 through S-5, an estimated 114,500 cubic yards of contaminated soil would be addressed. These alternatives address soils containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's IGWSCC for contaminants other than PCBs.

Comment #16: The same resident asked why EPA selected the cleanup goal of 10 ppm for PCBs and questioned why NJDEP's cleanup criterion isn't being used at the Site.

EPA Response: EPA's August 1990 guidance entitled "A guide on Remedial Actions at Superfund Sites with PCB contamination" recommends a cleanup goal between 10 - 25 ppm for commercial/ industrial properties. The State of New Jersey has developed a State-wide residential direct contact soil cleanup criterion for PCBs of 0.49 ppm and a non-residential direct contact soil cleanup criterion for PCBs of 2 ppm for commercial/industrial properties, which are "To Be Considered" criteria. Under Alternatives S-2 through S-5, EPA has identified a Remediation Goal of 10 ppm for PCBs for direct contact with soils as protective of human health and the environment under the expected future use conditions. This cleanup goal is within EPA's acceptable risk range of 10^{-4} to 10^{-6}.

Comment #17: The same resident asked for the definition of a principal threat waste.

EPA Response: Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The definition of a principal threat is included on page 7 of the Proposed Plan.

Comment #18: A resident asked for clarification regarding the use of engineering controls and institutional controls at the Site.

EPA Response: Institutional controls are non-engineered instruments such as administrative or legal controls that minimize the potential for human exposure to contamination, by limiting land or resource use or by providing information that helps modify or guide human behavior at a site. Examples of institutional controls include deed notices and advisories. Since contaminants would remain in soil above EPA's PCB cleanup goal for unrestricted use (1.0 ppm for residential exposures) recommended in EPA's 1990 PCB guidance, as well as the State of New Jersey's most protective soil cleanup criteria for PCBs (0.49 ppm), institutional controls would be employed to ensure that any future site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Engineering controls consist of physical measures designed to minimize the potential for human exposure to contamination by either limiting direct contact with contaminated areas, reducing contamination levels, or controlling migration of contaminants through environmental media. Examples of engineering controls are capping and containment. Contaminated soils at the Site containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped by use of a multi-layer cap. Hardscape (i.e., that part of the Site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping.

Comment #19: A resident asked what happens to the engineering controls after 30 years.

EPA Response: The 30 year period is used to calculate the present worth for each of the alternatives. The engineering and institutional controls do not expire at the end of the 30 year period and must be kept in place for as long as contamination remains on-site.

Comment #20: A resident wanted to know where the multi-layer cap would be installed and what the cap would look like.

EPA Response: Contaminated soils at the Site containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped by use of a multi-layer cap. Section 4 of the FS Report for OU2 describes the elements of a typical multi-layer cap. Hardscape (i.e., that part of the Site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping.

Comment #21: The same resident asked whether there will be a cell located at the Site where contaminated soil would be deposited after it has been treated.

EPA Response: Potential locations for the backfilled soil will be evaluated during the remedial design phase.

Comment #22: A resident asked for the concentrations of PCBs in soil that would be placed back in the ground after the contaminated soils have been treated in the LTTD unit.

EPA Response: Although the operational parameters of the LTTD unit will be evaluated during the remedial design phase, EPA anticipates that soils treated by the on-site LTTD will achieve a treatment goal of 10 ppm for PCBs prior to backfilling on site.

Comment #23: A resident asked whether Alternative S-2 contains the most stringent cleanup goal possible.

EPA Response: EPA evaluated Remediation Goals that are protective given the current and planned future uses of the Site. Under Alternative S-2, soils containing PCBs at concentrations greater than 10 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminants other than PCBs would be addressed. EPA's August 1990 PCB guidance recommends a cleanup goal of 1 ppm for unrestricted land use, such as residential land use. The State of New Jersey has developed State-wide residential direct contact soil cleanup criteria for PCBs of 0.49 ppm and non-residential direct contact soil cleanup criteria for PCBs of 2 ppm for commercial/industrial properties, which are "To Be Considered" criteria.

Comment #24: A resident asked why the soil alternatives do not contain clean up goals for the other contaminants found at the site.

EPA Response: While other contaminants, such as arsenic and lead, were identified in the risk assessment as incremental contributors to the direct contact risks posed by the site, EPA has not identified specific Remediation Goals for these other contaminants because the primary risk driver, PCBs, is ubiquitous across the Site, and EPA expects that remedies that adequately address the risks posed by PCBs would also address these other contaminants. Furthermore, metals found at elevated levels in soils were not found in the groundwater and, therefore, the facility soils do not appear to be a continuing groundwater threat based upon the metals content. Engineering and institutional controls would be employed to ensure that any future Site activities would be performed with knowledge of the Site conditions and implementation of appropriate health and safety controls.

Comment #25: A resident asked what is the duration of the cap and the duration of the hazard.

EPA Response: The engineering and institutional controls would have to be implemented as long as contaminants remain on the Site above the unrestricted use cleanup criterion. The long term operation and maintenance of these measures would be addressed in a Operation and Maintenance (O&M) Plan. In addition, five-year reviews would be performed to assure that the implemented remedies protect public health and the environment and that they function as intended by the decision document.

Comment #26: A resident asked what EPA's experience is with long term O&M.

EPA Response: EPA has implemented long term O&M plans at many Superfund sites across the country. It is standard practice for implementing cleanups that are of long duration, such as groundwater remedies, or for managing residual contamination on Site.

Comment #27: A resident asked for the drinking water criteria for PCBs.

EPA Response: Under the authority of the Safe Drinking Water Act, the drinking water standard for PCBs in drinking water is 0.5 parts per billion (ppb). The maximum concentration detected in groundwater at the Site was 84 ppb.

c. Extent of Contamination

Comment #28: A resident asked if contaminants, other than tetrachloroethylene, vinyl chloride and methylene chloride, were found at the Site.

EPA Response: Although PCBs are the most prevalent contaminants found on the property, sampling revealed volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, inorganics, and dioxins/furans at the Site. A complete list of all of the contaminants detected at the Site can be found in Appendix G of the RI Report.

Comment #29: A resident asked whether PCBs can act like a dust that flies through the air.

EPA Response: PCBs were widely used as a fire preventative and insulator in the manufacture of transformers, capacitors, and other electrical equipment, because of their ability to withstand exceptionally high temperatures. The manufacture of PCBs stopped in the United States in 1977. PCBs and chlorinated organic degreasing solvents were used by CDE in the manufacturing process at the South Plainfield facility, and the company apparently disposed of PCB-contaminated materials and other hazardous substances directly on the facility soils. CDE's activities evidently led to widespread chemical contamination at the facility, as well as migration of contaminants to areas adjacent to the facility. As described in Section 5 of the OU1 RI Report, contaminants have likely migrated from the facility property via airborne entrainment of contaminated particulates (i.e., fugitive dust emissions), vehicular traffic, surface water run-off, and percolation/migration to the groundwater.

Prior to the site stabilization measures that were implemented in 1997, there were exposed, non-vegetative soil areas at the industrial park (e.g., the roadways were a mixture of dirt, gravel, and stone), and activities on the industrial park have included vehicle operations (e.g., a truck driving school). These exposed surficial soil particles, with PCB contaminants adsorbed to their surfaces, likely became entrained into the air during dry, windy periods and then were transported with the prevailing winds, until they were deposited off the industrial park via wet or dry deposition processes. In addition to airborne entrainment, surface soils contaminated with PCBs may have been transported from the industrial park via vehicular traffic. Soil particles are typically disturbed by vehicles driving on dirt/gravel roads, especially during very dry periods (i.e., dusty conditions) and/or very wet periods (i.e., muddy conditions), and these particles then become attached to parts of the vehicle (e.g., tires, undercarriage). It is likely that contaminated soil particles adhered to vehicles transversing the industrial park, such as tractor trailer trucks. Subsequent travel by the vehicles from the industrial park may have re-deposited the dust/mud on roadways, driveways, etc., where surface water runoff may have further transported the contaminated soil particles to the surface of nearby property areas.

Contaminants may also migrate into air via volatilization. However, based on their vapor pressures and Henry's Law constants, very limited volatilization from contaminated soil can occur for PCBs. Therefore, in general, airborne migration of PCBs would principally occur as a result of fugitive dust emissions, not volatilization.

Comment #30: The same resident asked whether EPA performed soil sampling along the perimeter of the town, in addition to the sampling performed at the industrial park, to determine if PCB-contaminated dust was in other people's soil. If sampling was performed, the resident asked whether PCBs were detected.

EPA Response: EPA performed extensive sampling in the area surrounding the former CDE facility. EPA's sampling program surveyed an area covering approximately 135 acres. The results of the sampling performed of the properties in the vicinity of the former CDE facility are documented in the RI Report for OU1.

Comment #31: A resident stated in response to a telephone inquiry she made to EPA, she was told that dust from the CDE Site affects residents within a three mile radius.

EPA Response: Results of the OU1 RI do not indicate that PCB contamination has impacted residential properties three miles from the Site. However, sampling has revealed PCB contamination in the sediments of the Bound Brook and New Market Pond, approximately 2.4 miles downstream of the Site.

Comment #32: A resident asked about the building contamination at the Site.

EPA Response: Sampling performed in the facility buildings revealed PCB contamination in all 18 buildings. Elevated metals concentrations were also found in all 18 buildings. Results of soil samples collected beneath the concrete slabs of the buildings revealed that soils beneath the buildings are contaminated with various contaminants. The results of the sampling for each building are available in the RI Report.

Comment #33: A resident stated that debris from the capacitor disposal area used to be burned at the Site and the contamination has migrated off-site.

EPA Response: Test pit excavations performed during the RI revealed charred debris, indicating that material had been burned at the Site. In addition, sampling results indicate that the Site has impacted the groundwater, Bound Brook and nearby properties.

Comment #34: A resident asked whether there was black top over the contaminated soils.

EPA Response: As part of the Site stabilization measures implemented in 1997, an asphalt cap was installed on the developed portion of the industrial park.

Comment #35: A resident asked whether the soil contamination extends to the Bound Brook.

EPA Response: Sampling performed during the RI revealed that the soil contamination extends to the Bound Brook. Figures 4-1 through 4-53 of the OU2 RI Report identify the extent of contamination. Further delineation of this contamination will be conducted as part of the next phase at the Site.

Comment #36: The same resident pointed out that the depth of contamination in some areas would probably be shallow, whereas in some areas the contamination could extend to a depth of 12 feet.

EPA Response: Results of the RI reveal that the overburden is absent beneath a number of the buildings in the northwest corner of the property with increasing thickness towards the Bound Brook, to a maximum depth of about 15 feet.

Comment #37: A tenant at the industrial park asked if the current buildings at the industrial park were used during CDE's operations or if they were constructed after CDE left the property.

EPA Response: CDE operated at the Site from 1936 to 1962. In 1910, the first building was constructed at the industrial park. Records indicate that the last buildings were constructed in 1950.

Comment #38: A tenant at the industrial park asked about a black tar-like residue on the floor in the warehouse area of Building #6. He wanted to know whether that residue is from the PCB process.

EPA Response: EPA collected dust samples from each of the 18 buildings at the industrial park, including building #6. The sampling revealed PCBs at a concentration of 2,700 ppm in the building dust. EPA could not obtain further clarification, after the meeting, of the black tar-like residue referenced in Building #6.

Comment #39: The same tenant questioned whether the activities he is performing in Building #6 may aggravate the situation, creating dust or airborne situations that could harm his employees.

EPA Response: The Agency for Toxic Substances and Disease Registry (ATSDR) provided a fact sheet for the tenants at the industrial park. This fact sheet explains how workers at the industrial park may be exposed to PCBs and lead at the industrial park and ways to avoid exposure to PCBs and lead at the industrial park. The fact sheet also provides information on reducing exposure to chemical contaminants that have been detected on some surfaces inside buildings at the Hamilton Industrial Park.

Comment #40: The tenant asked whether the operation of the air handling unit for his building would pick contaminants emanating from the soil and bring it into his office space.

EPA Response: The area outside building #6 is paved and, therefore, the operation of an air handling unit would not be expected to create a dust condition.

Comment #41: A local environmentalist asked for clarification on the location of Area A and Area B that are referenced in the Proposed Plan.

EPA Response: Area A is generally defined as the developed portion of the facility property. Area B is generally defined as the undeveloped portion of the facility property. These references were only relevant in defining different current and future use areas of the property for the risk assessment.

Comment #42: The local environmentalist asked about the results of the dye testing in the storm sewers on-site and the potential for migration of contamination from the property.

EPA Response: As part of the RI for OU2, dye testing was performed to evaluate the storm water drainage system at the Site. The testing revealed that some of the storm sewers discharge to the Bound Brook. The storm sewers are located in the developed portion of the facility property, where paving was installed as part of the Site stabilization measures, thereby minimizing transport of contaminated soils into the system.

Comment #43: The same resident asked for the locations of the drain pipes.

EPA Response: The locations of the storm sewers and drainage pipes are identified in Figure 2-5 of the RI Report for OU2.

Comment #44: The same resident asked whether EPA knows if the mitigation of the storm drains was effective at preventing runoff from the Site.

EPA Response: EPA believes that paving around these storm drains, performed as part of the Site stabilization measures, has minimized the potential for soil to enter the drainage system.

Comment #45: The same resident asked if there is residual contamination infiltrating in any of these areas.

EPA Response: Samples of representative drainage system locations around the developed portion of the property were collected to determine the level of contamination in the on-site drainage system and the potential for the system to be a source and/or facilitated transport mechanism for contamination. Analysis of the five sediment samples and six standing water samples revealed concentrations of PCBs, VOCs, SVOCs, pesticides, and metals. These results are presented in Appendix G of the RI Report for OU2.

Comment #46: A resident asked whether the Site stabilization measures, such as the hay bales and silt fencing, had been maintained.

EPA Response: The current property owner, D.S.C. of Newark Enterprises, Inc. performs routine inspections of the Site stabilization measures that were implemented in 1997. Inspections that reveal the need to repair items that have been damaged are repaired. The hay bales and silt fencing that were installed as part of the Site stabilization measures were temporary measures until vegetative cover was in place in the undeveloped portion of the Site. Since the undeveloped portion is vegetated, the hay bales and silt fencing are no longer necessary.

Comment #47: The same resident asked whether it would be beneficial to seal the drainage pipes.

EPA Response: EPA does not believe that the current conditions warrant an immediate action. The drainage system removes stormwater from the Site. The drainage pipes would be addressed in the performance of the remedial action for OU2.

d. Public Acceptance and Short-term Effectiveness

Comment #48: A resident questioned how EPA plans to contain the soil, once work begins, so that contamination will not become airborne.

EPA Response: During the remedial design phase, health and safety plans will be developed to ensure that the work will be performed in a manner that is protective of the construction workers on-site and the nearby residents and businesses. Proven procedures including engineering controls and safe work practices would be used to address potential impacts to the construction workers and community. In addition, the appropriate air monitoring would be performed, during the implementation of any remedial action at the Site.

Comment #49: A resident stated that during prior removal actions that were performed at properties along Hamilton Boulevard, she observed that the soil was not covered as it was loaded onto the trucks. The resident claimed that dust must have been generated by the excavation activities and people may have been contaminated as a result of this work. The resident further stated that better protection should be in place before beginning the remedial action at the industrial park.

EPA Response: During the implementation of the Tier I and Tier II removal actions, the appropriate engineering controls were implemented to minimize the generation of dust. In addition, air monitoring stations were installed and monitored, and trucks carrying soil away for off-site disposal were tarped. During the implementation of the remedial action for OU2, the appropriate engineering controls and safe work practices will be used to address potential impacts to the construction workers and community.

Comment #50: A resident asked how EPA determines the manner in which the cleanup will be performed, such as how contaminated soil will be transported.

EPA Response: The plans and specifications will be developed during the remedial design phase. For example, transportation routes and the method of transportation (e.g., via rail or truck) will be evaluated during the remedial design. The FS assumed truck transportation would be used.

e. Operable Unit 1

Comment #51: A resident asked if the residential sampling results were provided to property owners who might have moved away from the area prior to 1995, and whether EPA has searched for individuals who lived in the area, but may have moved out of the neighborhood recently.

EPA Response: EPA provided the residential sampling results to the owners of the properties at the time of sampling. EPA has not made an effort to provide the results to prior owners, though some former residents have sought out EPA for information after hearing of the Site.

Comment #52: A resident asked whether the South Plainfield Department of Public Works property has been sampled and what were the results.

EPA Response: In the summer of 2000, EPA collected 25 soil samples from the South Plainfield Department of Public Works property, identified as 405 Spicer Avenue. Soil sampling revealed PCB concentrations ranging up to 0.45 ppm, which does not pose an unacceptable cancer risk or non-cancer hazard index to the workers.

f. Bound Brook

Comment #53: A resident asked whether Spring Lake was contaminated.

EPA Response: During the summer of 1997 EPA collected sediment, surface water, and edible fish tissue samples as part of an ecological evaluation of the Bound Brook downstream of the industrial park. As part of this evaluation, sediment and edible fish tissue samples were analyzed from Spring Lake. The results of this sampling revealed VOC, SVOC, and metal concentrations in the sediment. However, PCBs were not detected in the sediments. In addition, pesticides and PCBs were detected in the edible fish tissue. This information is contained in the document entitled "Ecological Report for Cornell-Dubilier Electronics Site", dated August 1999, which is in the Site Administrative Record. As a result of this sampling, NJDEP issued a fish consumption advisory for Bound Brook, New Market Pond and Spring Lake.

In addition, in April 1999, NJDEP collected 32 sediment samples in Spring Lake and along Cedar Brook from Plainfield High School to the lake. Sediment samples were also collected along a feeder stream from Maple Avenue to Cedar Brook. No PCBS were detected in any of the samples collected. Alpha and gamma-chlordane were the most prevalent contaminants detected. Other contaminants detected included DDT, DDD, heptachlor epoxide, dieldrin, and endrin aldehyde.

Comment #54: The same resident raised a concern that soil adjacent to the waterways could be contaminated because the water overflows onto the land. The resident further stated that children and animals use these areas on a daily basis.

EPA Response: During the summer of 1997, EPA collected 1,060 soil and sediment samples along 2.4 miles of the streambed of the Bound Brook. The results of this sampling revealed wide-spread low level PCB contamination along the Bound Brook.

As a result, in June of 1999, EPA conducted additional surface soil and sediment sampling along the Bound Brook downstream of the industrial park in four distinct recreational areas, including Veterans Memorial Park. The sampling revealed PCB concentrations ranging from "non detected" to a maximum concentration of 25 ppm in Veterans Memorial Park. NJDHSS reviewed the results of this sampling event and determined these areas currently pose no apparent health hazard to children and adults who utilize these areas for recreational purposes. The NJDHSS determined that residents using the areas would not be exposed to PCBs at levels of public health significance. This information can be found in the ATSDR Health Consultation, developed by NJDHSS for ATSDR, dated May 25, 2000. Subsequent to this health consultation, the Borough of South Plainfield limited access to areas in Veterans Memorial Park due to the discovery of asbestos-containing material and other debris.

Comment #55: The same resident asked for clarification of the term "recreational use".

EPA Response: The term recreation use is based on the observed activities at the park. As part of the health consultation, NJDHSS and EPA staff performed a site visit on March 7, 2000. During the site visit, people were observed parking their cars and walking their dogs in the woodland areas. Veterans Memorial Park also contains ball fields. Therefore, it is expected that children and adults use the park for activities such as ball playing, fishing, and having picnics. The exposure frequency for the recreational user would be less than that of a resident.

Comment #56: A resident asked whether portions of the Bound Brook upgradient to the industrial park have been sampled.

EPA Response: As part of the soil and sediment sampling performed in the Bound Brook in 1997, EPA collected samples, at 50 foot intervals, along a reach of the Bound Brook approximately 500 feet immediately upstream of the Site.

Comment #57: A resident asked whether the Dismal Swamp will be included in the investigation of the Bound Brook.

EPA Response: EPA anticipates that additional sampling would be performed upgradient of the industrial park, as part of the investigation of the Bound Brook. A separate RI/FS is being performed for the Woodbrook Road Dump Superfund Site, which is located within the Dismal Swamp. The Woodbrook Road Dump Site also has PCB contamination.

g. Costs

Comment #58: A resident asked what time frame was used in the present worth analysis for the remedial alternatives.

EPA Response: The present worth cost evaluates a 30 year period.

Comment #59: The same resident asked whether the funding for the operation and maintenance would be coming from the State Superfund Contract or from the property owner.

EPA Response: To date, no determinations regarding funding for this work have been made by EPA. EPA will explore all available funding options at the appropriate time.

Comment #60: The same resident asked whether rail lines were considered for transportation of the contaminated soil and debris off the Site and whether the costs in the FS were based on truck or rail.

EPA Response: For cost estimating purposes, the FS evaluated costs for each of the alternatives based on trucks. During the remedial design phase, the effectiveness of using rail lines to transport contaminated soil and debris will be evaluated.

Comment #61: A resident asked who would take control of the property when the project starts.

EPA Response: The Hamilton Industrial Park is currently owned by D.S.C. of Newark Enterprises, Inc., a potentially responsible party for the Site. EPA has enforcement tools to assure that a remedy is performed, but EPA does not need to "control" the land in order for the remedy to be performed.

Comment #62: A resident asked who is funding the project.

EPA Response: The RI/FS for the Site was performed using federal funds.

PART 2: Written Comments

Comments and concerns that were not addressed at the public meeting were accepted in writing during the public comment period. Written comments have been presented verbatim and identified in italicized print.

B. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD FROM THE SOUTH PLAINFIELD ENVIRONMENTAL COMMISSION

Comment #B.1: *At its July meeting, the South Plainfield Environmental Commission discussed the remedial alternatives presented at the EPA's public meeting on July 13. Most of the members attended the meeting. They thought that there were many questions that were not relevant to deciding on a remedial strategy.*

EPA Response: EPA considers community involvement an important part of the Superfund process. For this Site EPA has held several public information sessions in South Plainfield, beginning in 1997, in order to inform the community of the results of investigations and upcoming actions related to the Site. Although the purpose of the July 13, 2004 public meeting was to explain and solicit comment on the Proposed Plan for OU2, EPA welcomes community input on all aspects of the Superfund process. As a result, EPA believes that the July 13, 2004 meeting was very productive and identified legitimate concerns.

Comment #B.2: *The Environmental Commission agrees with EPA's Preferred Alternative, which combines Alternative S-3 and S-5. Because there are still many uncertainties about the extent and nature of the contamination that will have to be dealt with, the EC believes we will need the flexibility offered by adopting a two-pronged approach of soil treatment where possible and removal where necessary. There was some concern with what form the Low Temperature Thermal Desorption system would take. However, the EC concluded that the aesthetic and environmental impacts would be temporary while the advantages of lower cost and of decontaminating the soil would be permanent.*

EPA Response: The specifications referred to in the comment will become available during the remedial design phase. As indicated in response to comment B.1, EPA believes that the public information sessions have been a useful tool to inform the community of the activities at the Site. EPA intends to continue to hold information sessions in South Plainfield, and will provide this information to the community as it becomes available.

C. WRITTEN COMMENTS RECEIVED FROM THE BOROUGH OF SOUTH PLAINFIELD*

* Although comments from the Borough of South Plainfield were received by the Agency after the

comment period closed, the comments have been included in the Responsiveness Summary.

Comment #C.1: *The Mayor and Council of the Borough cannot stress enough their whole-heartedly support the expeditious cleanup of the Hamilton Boulevard Industrial Site and believe that the representatives from Cornell Dubilier and Dana Corporation have provided a viable cleanup alternative. We urge the EPA to endorse the proposed cleanup plan as submitted by these companies.*

EPA Response: EPA has evaluated the alternative proposed by Cornell-Dubilier Electronics, Inc. and Dana Corporation (see section H, below). Based on this review, EPA has made a determination that the PRPs' proposed alternative does not meet the Remedial Action Objectives for the Site. The PRPs' proposed Cleanup Goals defining principal threats at the Site are inconsistent with EPA's PCB guidance and the State of New Jersey's impact-to-groundwater cleanup criteria, are not supported by NJDEP, and, based upon the comments received from other members of the community, would be strongly opposed in the community.

Furthermore, the PRPs' proposed alternative selectively identifies remedial components that support the PRPs' objective of minimizing costs, but that in EPA's assessment do not provide adequately protective responses to the problems posed by the Site. Please also review the Comparative Analysis of Alternatives section of the Decision Summary and EPA's response to the PRPs' comments.

D. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD FROM 1) TINA RUSSELL; 2) LINDA LOVELLO; 3) PATRICIA E. MILLER; 4)ROBERT SPIEGEL, EXECUTIVE DIRECTOR OF THE EDISON WETLANDS ASSOCIATION; 5) THOMAS POLITOWSKI; 6) JEANNIE POLITOWSKI; 7) DANIEL POLITOWSKI; 8) DEVIN POLITOWSKI; AND 9) KIM POLITOWSKI*

* The following identical written comments were received separately from the above-referenced individuals.

Comment #D.1: *As you may know, Cornell-Dubilier Electronics is an extremely hazardous site even by Superfund Standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the State of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local* *residents still unknowingly fish. The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million.*

EPA Response: EPA's August 1990 guidance entitled "A guide on Remedial Actions at Superfund Sites with PCB contamination" recommends a cleanup goal between 10 - 25 ppm for commercial/industrial properties. For this Site, EPA has selected a Remediation Goal of 10 ppm for PCBs for direct contact with soils. Under the Selected Remedy, PCB-contaminated soil will remain on-site at concentrations up to 500 ppm. The Selected Remedy requires the installation of a multi-layer cap, engineering controls, and institutional controls to address these areas to prevent direct contact with residual contamination.

The State of New Jersey has developed a non-residential direct contact soil cleanup criterion for PCBs of 2 ppm for commercial/industrial properties. Because this is not a promulgated standard, it is not an "Applicable or Relevant and Appropriate" standard, but a "To Be Considered" criterion. EPA has evaluated the extent of surface soil PCB contamination at OU2 of the CDE Site and estimates that 96 percent of the surface soil exceeds NJDEP's 2 ppm cleanup criterion, whereas 92 percent of the surface soil exceeds EPA's 10 ppm Remediation Goal. This very small difference in area, coupled with the future-use plans for the Site, indicate that a remedy preventing direct contact with soils containing PCBs above EPA's 10 ppm Remediation Goal would be adequately protective, as compared to NJDEP's more stringent 2 ppm criterion. NJDEP disagrees with EPA's selection of a 10 ppm Remediation Goal for direct contact, preferring the 2 ppm criterion, but concurs with EPA's Selected Remedy that entails addressing the principal threats at the Site through excavation and treatment or off-site disposal and using capping and institutional controls to manage the lower level threats posed by the Site.

Comment #D.2: *It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human health and the environment.*

EPA Response: Although EPA has considered the redevelopment and the future use of the industrial park in the development of the FS for OU2, EPA's priority for this Site is protecting public health and the environment. In developing the remedial alternatives for this operable unit, EPA ensured that each of the remedies evaluated, except the no action alternative, would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through off-site disposal/treatment, engineering controls and/or institutional controls. The Remediation Goal of 10 ppm is within EPA's protective risk range for commercial/industrial properties.

EPA takes into consideration the interests of the community and future-use plans when developing remedial alternatives. The Borough of South Plainfield considers the redevelopment of the Hamilton Industrial Park a high priority, and EPA included several redevelopment considerations, such as flexible capping criteria, in the remedial alternatives, and considered the redevelopment in its discussion of the nine evaluation criteria, under the "Short-term Effectiveness" section.

Comment #D.3: *In addition, the plan fails to address a number of other crucial issues: The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children bearing age, to work in these buildings without fully characterizing their contamination.*

EPA Response: The Agency for Toxic Substances and Disease Registry (ATSDR) conducts Public Health Assessments for all Superfund sites. The purpose of the Public Health Assessment is to find out if people are being exposed to hazardous substances and, if so, whether that exposure is harmful and should be eliminated or reduced and the time frame under which remediation is necessary. At EPA's request, ATSDR has conducted several Public Health Assessments for the CDE Site. These health assessments have been conducted after each of the major sampling events were performed by EPA. For example, ATSDR conducted health assessments in May 1997 and March 2001, based upon the sampling performed by EPA as part of the remedial investigation within the 18 buildings located at the industrial park. EPA has collected 76 wipe, chip, and vacuum dust samples from the 18 buildings. As a result of ATSDR's evaluation of this data, ATSDR concluded that short-term effects are not likely to occur given the levels of contamination, but that the conditions do pose a potential long-term threat to workers.

After each sampling event, EPA met with the tenants at the industrial park to discuss the results and distributed fact sheets prepared by ATSDR that provided information on reducing exposure to chemical contaminants detected in the buildings.

In addition, at EPA's request, the U.S. Department of Labor

Occupational Safety and Health Administration (OSHA) conducted air and wipe sampling in one of the buildings at the industrial park. Based on this sampling, OSHA determined that workers were exposed to polychlorinated biphenyls (PCBs) at levels below the OSHA permissible exposure limits (PELs). However, the exposure levels were in excess of the National Institute for Occupational Safety and Health (NIOSH) recommended exposure level. As a result, OSHA required the posting of signs within the building.

Comment #D.4: *Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation.*

EPA Response: The State of New Jersey has developed a State-wide residential direct contact soil cleanup criterion for PCBs of 0.49 ppm and a non-residential direct contact soil cleanup criterion for PCBs of 2 ppm for commercial/industrial properties, which are "To Be Considered" criteria. The current and future use of the industrial park is commercial/industrial.

In addition, institutional controls, such as a deed notice, would be employed at the Site since contaminants would remain in soil above EPA's PCB cleanup goal for unrestricted use (1.0 ppm) recommended in EPA's 1990 PCB guidance, as well as the State of New Jersey's most protective soil cleanup criteria for PCBs (0.49 ppm) and New Jersey's residential direct contact soil cleanup criterion for inorganics for the Site. This information is presented on page 11 of the Proposed Plan. Engineering and institutional controls are well-established methods of managing lower level threats that remain on-site after a cleanup.

E. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD FROM DEBORAH A. MANS, ESQ., POLICY DIRECTOR, NY/NJ BAYKEEPER

Comment #E.1: *Baykeeper is extremely troubled by the EPA's proposal to leave PCB levels at 500 parts per million (ppm) on the site after clean-up. This is 250 times the State-allowed level of 2 ppm for unrestricted use. While state regulations do allow the establishment of site-specific criteria, the EPA has not demonstrated that the levels it is proposing will be as protective as the 2 ppm level.*

EPA Response: See response to Comment D.1, above.

Comment #E.2: *Indeed, the proposed plan for remedial action is sorely lacking in any specifics as to how the contamination left on-site will be isolated. The multi-layer cap for the levels of PCBs between 10 and 500 ppm is undefined and the engineering controls for the levels of PCBs between 2 and 10 ppm are likewise undefined. How is the public supposed to comment on and be aware of the methods for protecting the public health when the proposed plan leaves this issue vague and undefined? It also places a question on the priority for the EPA on this site - is it the protection of the environment and public health or the speedy redevelopment of this site?*

EPA Response: Section 4 of the FS Report for OU2 describes a multi-layer cap system as a combination of two or more single layer capping technologies. Figure 4-3 of the FS Report shows a typical cross-section for a multi-layer cap system, although other designs are possible that achieve the same goals. In addition, "hardscape" surfaces (*e.g.*, building foundations, concrete walkways, asphalt parking areas) could be used in conjunction with the multi-layer cap. At this Site, EPA found there to be very little difference in protectiveness between EPA's Remediation Goal of 10 ppm and the NJDEP criterion of 2 ppm: both would require capping of more than 90 percent of the Site, and the remaining 10 percent of the Site would be subject to some type of engineering control, such as a soil cover, under either Remediation Goal. Also, see EPA's response to comment D.2, above.

Considering that the facility is an active industrial park, EPA believes that the property owner(s) and/or the parties performing the work should be allowed flexibility in the design of the cap in order to accommodate any future redevelopment. However, any design must achieve the goals and standards established by EPA and NJDEP. In order to address the community's concern, this information will be made available during the remedial design phase.

Comment #E.3: *In order to address this issue the EPA should be using the acceptable state standard of 2 ppm for the clean-up standard for the entire site.*

EPA Response: See response to Comment D.1, above.

Comment #E.4: *Additionally, the EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, allowing people to work in the buildings right now* *without fully characterizing the contamination is unacceptable. There must be a short-term plan to address this outstanding issue.*

EPA Response: See response to Comment D.3, above.

Comment #E.5: *Further, the State of New Jersey requires a deed notice when contamination above its most restrictive cleanup criteria will remain on-site, indicating a deed notice and engineering controls are required for the CDS for all soils with greater than 0.49 ppm PCB. The Proposed Plan only includes a deed notice for all soils greater than 2 ppm. PCB contaminated soil between 0.49 ppm and 2 ppm are not addressed at all by the Proposed Plan. They will neither be placed under the multi-layer cap nor subject to a deed notice. The EPA needs to address this issue.*

EPA Response: See response to Comment D.4, above.

Comment #E.6: *One of the highest levels of PCBs in the state of New Jersey is found in fish caught in the Bound Brook adjacent to the Cornell-Dubilier site, where many local residents still unknowingly fish. In the short-term the EPA must ensure that adequate signage exists along this waterway to warn the public about the dangers of eating fish caught in the Bound Brook and that a local education campaign, in the appropriate languages, is conducted.*

EPA Response: NJDEP has issued a fish consumption advisory for the Bound Brook and its tributaries as a result of EPA's investigation of the Bound Brook. Although NJDEP would be responsible for posting any additional signs or publication of the advisory in periodic fishing digests, EPA will coordinate with the Borough of South Plainfield and NJDEP to evaluate whether current notification efforts are satisfactory.

F. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD FROM MR. ROBERT TAKASH, PRESIDENT, EDISON GREENWAYS GROUP

Comment #F.1: *There are some serious concerns for many of us living in the South Plainfield and Edison (NJ) area. Under your management at the United States Environmental Protection Agency, the Superfund Site at the Cornell-Dubilier Electronics property, located at 333 Hamilton Boulevard in South Plainfield (NJ), should be safeguarded in the remediation and clean-up process.*

EPA Response: Any work performed at the Site would be performed under EPA oversight. The appropriate health and safety controls would be in place during the implementation of the work.

Comment #F.2: *The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this seemingly irresponsible proposal! We also request that the EPA use the acceptable New Jersey State standard of 2 parts per million.*

EPA Response: See response to Comment D.1, above.

Comment #F.3: *Hopefully the EPA is not placing more priority on redevelopment and less protection of people and their surroundings.*

EPA Response: See response to Comment D.2, above.

Comment #F.4: *Moreover, the proposed plan overlooks many other issues, such as: The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing the contamination.*

EPA Response: See response to Comment D.3, above.

Comment #F.5: *Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation.*

EPA Response: See response to Comment D.4, above.

Comment #F.6: Overall, hasn't the lessons of better contamination control been learned yet from the 9/11 NYC Site?

EPA Response: Pursuant to the 1997 Site Stabilization Order, measures have been implemented to mitigate risks associated with contaminated soil and surface water runoff from the facility. In addition, proven procedures including engineering controls, personnel protective equipment and safe work practices would be used to address potential impacts to workers and the community during performance of future remedial actions.

Comment #F.7: *Can't the EPA prohibit employees from working* *around elevated levels of PCB's without a thorough characterization of the contamination?*

EPA Response: See response to Comment D.3, above.

Comment #F.8: *We look to you, sir, for answers.....and.....urge the USEPA to implement a safer plan!*

EPA Response: EPA and NJDEP have determined that the Selected Remedy is protective of human health and the environment.

G. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD FROM PETER MONTAGUE, DIRECTOR, ENVIRONMENTAL RESEARCH FOUNDATION

Comment #G.1: *Any contaminants left on the site will eventually be carried off the site by living things -- animals, insects, microorganisms, wind, rain, and other natural phenomena such as volatilization, convection and gravity. The ecological risk assessment for the Cornell-Dubilier site identified 40 mammals living on the site, plus some amphibians and reptiles. Insect life was not quantified. Annelids were not quantified. Other soil organisms were not quantified. But these -- and other forms of life on the site -- will all serve as vectors, moving contaminants slowly off the site. Even vegetation, growing on bare soil or through the cracks in concrete and asphalt will absorb small amounts of waste, die, and move off-site, slowly but surely carrying contaminants off the site into the surrounding areas and communities. Contaminants left on the site today will be slowly distributed onto nearby properties, then eventually into the environment of central New Jersey in the future. Institutional controls (such as deed restrictions) and engineering controls (such as chain link fences, and asphalt paving) may slow this process, but they will not halt this process. This is the second law of thermodynamics at work, and we can slow it down but we cannot reverse it permanently. Cleaning up the site (not sweeping the toxicants under a "rug" of asphalt or concrete) is the only way to avoid continuous low-level contamination of surrounding properties. To be blunt, contaminants that we refuse to clean up today will most likely poison someone's children tomorrow. If we are going to choose to do this, we should at least be honest about it and acknowledge what we are doing. Otherwise, the public will be misled about the nature of the choice EPA is asking them to condone, in which case the public will be exposed to low levels of contaminants without* *anyone's informed consent -- clearly a violation of the ethical obligations of environmental professionals.*

EPA Response: Section 5 of the RI Report for OU2 discusses the environmental fate and potential transport mechanisms of the contaminants present at the former CDE facility. The RI Report identifies several potential pathways for the fate and transport of contaminants of concern, including the migration of contaminants into biota. Specifically, the report states:

> "Contaminants present in facility soil, surface water and/or wetland sediments may accumulate in terrestrial plants or organisms directly through bioconcentration or indirectly by bioaccumulation through the food chain. This migration of contaminants into terrestrial biota is an extremely important environmental transport mechanism at the facility potentially affecting algae and terrestrial plants, invertebrates, fish, reptiles, birds and mammals."

In order to address the potential off-site migration of contamination, the Selected Remedy requires the implementation of engineering controls, including the installation of a multi-layer cap. Because contaminated soil would be left in place under the Selected Remedy, a review of the remedy every five years would be required. The purpose of five-year reviews is to assure that implemented remedies protect public health and the environment and that they function as intended by the decision documents.

Comment #G.2: *The risk assessment techniques that EPA uses to determine "safe" or "acceptable" levels of residual contamination have the unanticipated (but now well-understood) consequence of allowing low levels of contamination to permeate the environment. By focusing on the safety of the "maximally exposed" individual, EPA (and Foster-Wheeler) risk assessment techniques allow millions upon millions of "safe" or "acceptable" releases of industrial chemicals into the environment. The assumption is that, if the "maximally exposed" individual is not harmed, then no one will be harmed. Unfortunately, this assumption is false because it leads EPA to sanction and approve millions of small, supposedly inconsequential chemical releases -- of the kind we can expect from the Cornell-Dubilier site if EPA's favored scenario is adopted. As time passes, these "inconsequential" releases add up to a serious amount of contamination. This failure of risk assessments to protect the environment was identified and documented in 1991 by researchers at Oak Ridge National Laboratory (ORNL), who pointed out that the entire planet is now polluted by exotic industrial chemicals because of* *risk assessors' focus on the "maximally exposed" individual instead of on the cumulative impact of millions of small releases. See Curtis C, Travis and Sheri T. Hester, "Global Chemical Contamination," Environmental Science & Technology Vol. 25, No. 5 (May, 1991), pgs. 815-819. Available at http://www.rachel.org/library/getfile.cfm?ID=452*

EPA Response: EPA conducted the risk assessment in accordance with EPA risk assessment policies and guidelines and Superfund guidance. The documents used as the basis of the risk assessment are referenced in the Chapter 6 of the Remedial Investigation and include documents available at http://www.epa.gov/superfund/programs/risk/, www.epa.gov/ncea under the publications section, http://cfpub2.epa.gov/ncea/raf under the publications section, and www.epa.gov/iris for specific chemical files. As described on these homepages, EPA's process for developing guidelines and guidance include internal Agency review, Federal Register Notices that make the documents available for public comment, external peer-review (where appropriate), and finalization of the document.

The OU2 risk assessment was conducted consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). In accordance with Superfund guidance, actions at Superfund sites are based on an estimate of the reasonable maximum exposures (RME) expected to occur under both current and future conditions at the site, in the absence of remedial response or institutional controls. The RME is defined as the highest exposure that is reasonably expected to occur at a site (U.S. EPA, Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), EPA/540/1-89/002, December 1989). As indicated in the OU2 risk assessment, risk estimates were also included in the document for the central tendency (CT) or average exposures. The cancer risks and non-cancer health hazards for individuals exposed currently and in the future at OU2 are documented in Chapter 6 of the Remedial Investigation and Appendix I (tables detailing the toxicity information, exposure assumptions, and calculated cancer risks and non-cancer hazards to the RME and CT exposed individuals).

Consistent with the Risk Assessment Guidance for Superfund (EPA, Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), EPA/540/1-89/002, 12/1989), and the Chemical Mixtures Guidelines (Guidelines for the Health Risk Assessment of Chemical Mixtures, EPA/630/R-98/002, 9/1986) and Supplementary Guidance for Conducting Health Risk Assessment of

Chemical Mixtures (Risk Assessment Forum, Washington, DC, EPA/630/R-00/002, 2000), and as discussed in the risk assessment (see Section 6.5.1 and 6.5.2 of the OU2 RI), cancer risks are summed across chemicals and exposure pathways. The calculation of non-cancer health hazards involves a two step process. First, the total Hazard Index is calculated by combining the individual Hazard Quotients across individual chemicals and pathways. Secondly, where the Hazard Index is greater than 1, the chemicals are combined based on similar health endpoints and modes of action. The results of the calculations are provided in the RI Report (Sections 6.5.3 and Tables 7 through 9 of Appendix I). (Note: the Chemical Mixture Guidelines are also available at http://cfpub2.epa.gov/ncea/raf/rafguid.cfm.)

Comment #G.3: *Taking into consideration points (1) and (2) above, the EPA's array of proposals for the Cornell-Dubilier site is entirely inadequate because a complete cleanup of the site (to natural background levels) is not offered as an option and is therefore not considered.*

EPA Response: EPA's August 1990 PCB guidance recommends a range between 10 - 25 ppm as a cleanup goal for commercial/industrial properties. Consistent with CERCLA and Superfund risk assessment guidance, Remediation Goals were developed based on an evaluation of the anticipated future use of the property and potential exposures to the RME individual. At the Cornell-Dubilier Electronics, Inc. Site, Borough officials have repeatedly indicated that the future use of the facility property that comprises OU2 will remain commercial/industrial. Therefore, the Selected Remedy would provide adequate protection consistent with these guidelines. (See, Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual Part B, Development of Risk Based Preliminary Remediation Goals, EPA 540/R-92-003, December 1991. This document is also available at: www.epa.gov/superfund/programs/risk/ragsb/index.htm)

Comment #G 4: *Taking into consideration points (1), (2), and (3) above, the EPA's proposal for the Cornell-Dubilier site is a violation of the basic human rights of the people of Central New Jersey. The United Nations Commission on Human Rights has declared that we all have a basic right to an uncontaminated environment. Since all the options that EPA has proposed for the Cornell-Dubilier site will lead to contamination of central New Jersey in coming years, EPA's proposal violates the basic human rights of all who will be affected. See United Nations Environment Programme (UNEP). Living in a Pollution-Free World a Basic Human Right. UNEP Press Release 2001/49. Nairobi, Kenya:*

United Nations Environment Programme, 2001. Available at *http://www.rachel.org/library/getfile.cfm?ID=307*

EPA Response: EPA concluded that each of the alternatives evaluated in the FS, except the no action alternative, would provide adequate protection of human health and the environment. Please refer to EPA's response to comment G.1, with regard to the potential for off-site migration of contamination. The agency has clearly defined the Site as posing a direct contact and off-site migration threat. The magnitude of the threat posed by the Site as characterized by the commentor is not supported by the Site-specific data or by generally accepted environmental science.

Comment #G.5: *The EPA risk assessor who responded to public comments and questions during the public meeting in South Plainfield on July 13, 2004 gave at least two false and misleading answers. When I asked directly whether EPA had taken into consideration possible chemicals affects on the nervous system, the immune system, the reproductive system, and the endocrine (hormone) system, plus effects on growth, development, and behavior, the EPA risk assessor responded that each of those health end-points had been considered. I was told that the risk assessment available in the South Plainfield Library addressed all those health end points. I visited the South Plainfield Public Library and examined the risk assessment in question. I have placed the risk assessment on a web site for all to see: NK"http://www.rachel.org/library/getfile.cfm?ID=453"http://www.rachel.org/library/getfile.cfm?ID=453 (warning: it's 3 megabytes). As we can see from page 6-23, the risk assessment specifically omits consideration of risks to the endocrine system and other biological signaling systems, and it omits reference to chemical effects on human behavior. Therefore, the EPA risk assessor who gave the false and misleading answer to my question was either ignorant of the contents of the risk assessment, or was intentionally misrepresenting the scope of the risk assessment. Either way, this risk assessor needs to be held accountable for this serious violation of ethical standards for environmental professionals. The EPA risk assessor gave another false and misleading answer to one of my questions. I asked whether the risk assessment had taken into account the cumulative effects of mixtures of chemicals found at the site and the background levels of contaminants to which we are all routinely exposed (diesel exhaust, low levels of pharmaceutical products in drinking water, etc.). The combined effect of many small doses is relevant because we are all exposed to numerous endocrine-disrupting* *chemicals at low levels via indoor air and dust. For example, see Ruthann A. Rudel and others, "Phthalates, Alkylphenols, Pesticides, Polybrominated Diphenyl Ethers, and other Endocrine-Disrupting Compounds in Indoor Air and Dust," Environmental Science & Technology Vol. 37, No. 20 (2003), pgs. 4543-4553. Available at http://www.rachel.org/library/getfile.cfm?ID=372 (Anyone wanting to learn New Jersey-specific details about the many toxicants to which residents of New Jersey are routinely exposed should examine the New Jersey Department of Environmental Protection's Final Report of the New Jersey Comparative Risk Project (Trenton, N.J.: N.J. Department of Environmental Protection, July, 2003), available at http://www.state.nj.us/dep/dsr/njcrp/ -- especially the appendix on human health.)*

At the public meeting in South Plainfield, the EPA risk assessor asserted that the Cornell-Dubilier risk assessment did take into consideration the cumulative effects of mixtures of chemicals, specifically referring to the chemicals on the site -- several different PCBs, TCE and its dechlorination products, other volatile organics, semi-volatile organics, 19 different pesticides, 23 metals, dioxins (including 2,3,7,8-TCDD) and so on. Unfortunately, the risks of chemical mixtures cannot be reliably evaluated, and the EPA risk assessor knows -- or should know -- this. It is widely acknowledged by risk assessors and a wide range of scientists in many disciplines that risk assessments cannot take into consideration the effects of mixtures of chemicals. See, for example, David O. Carpenter and others, "Understanding the Human Health Effects of Chemical Mixtures," Environmental Health Perspectives Supplement 1, Vol. 110 (February 2002), pgs. 25-42. Available at http://www.rachel.org/library/getfile.cfm?ID=454 For further discussion of the difficulties toxicologists face in measuring the health effects of mixtures, see Emily Monosoon, Chemical Mixtures (South Hadley, Mass.: Center of the Environment, Mount Holyoke College, Nov. 16, 2003); available at http://www.rachel.org/library/getfile.cfm?ID=455 These two publications merely scratch the surface in describing the difficulties scientists face in assessing risk of exposure to mixtures. It is unconscionable for an EPA employee to tell the townspeople of South Plainfield that the risks of exposure to mixtures have been successfully assessed for the Cornell-Dubilier site. Such assurances are false and misleading.

EPA Response: EPA's evaluation of the toxicity of chemicals at OU2 involved the review of toxicity information on all of the individual chemicals found at the Site. EPA used toxicity values developed by the Agency at the national level that are applied at EPA Superfund sites across the country.

As described in Section 6.4 of the RI Report, the development of the toxicity values for individual chemicals involves a number of steps. First, the available chemical-specific published peer-reviewed scientific literature is compiled and reviewed. The published studies include human epidemiological studies, animal toxicity tests, and supporting information. The review process is identified in EPA's Integrated Risk Information System (or IRIS) available at www.epa.gov/iris (See Background documents) and the various guidelines available at www.epa.gov/ncea (See publications). Second, EPA evaluates numerous peer-reviewed available studies for each individual chemical including data on a wide variety of health endpoints (e.g., neurological, endocrine system, liver, kidney, reproductive, etc.) to identify a critical study and the critical effect. The critical study and the critical effects represent the most sensitive endpoint based on the available scientific literature and serve as the basis for the development of the toxicity values that were used in the OU2 risk assessment. The sources of toxicity information are provided in the RI Report, Section 6.4 and Appendix I, Table 5 for non-cancer health effects and Table 6 for the cancer toxicity and Weight of Evidence documents. For the non-cancer health effects, Uncertainty Factors are applied to the dose level associated with the critical effect and the dose level is further reduced to protect sensitive individuals including children. For the cancer assessment, the tumor types are evaluated and the cancer slope factor is determined. The cancer slope factor represents a plausible upper bound estimate of carcinogenic potency which means that EPA is reasonably confident that the actual cancer risk will not exceed the estimated risk calculated using the CSF.

For example, the IRIS chemical files used for PCBs (a major contaminant at the site) are available at www.epa.gov/iris. The specific chemical files for non-cancer health effects are listed as Aroclor 1254 and Aroclor 1016. The cancer toxicity information is available as the IRIS chemical file for PCBs and the associated 1996 Cancer Reassessment for PCBs (PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures, EPA ORD, EPA/600/P-96/001F, 1996, available at: www.epa.gov/ncea - publications). These documents were also identified in the RI Report.

Each of these documents includes specific discussions regarding the numerous health effects identified for PCBs based on the available scientific literature. After evaluating the various health effects including reproductive toxicity, neurodevelopmental effects, immunological effects, growth and development, etc. and the various tumors resulting from animal toxicity testing, critical health effects and critical studies for both the cancer and non-cancer toxicity values were identified. Following the evaluation of the extensive literature on PCBs, EPA selected ocular exudate, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails, and decreased antibody (IgG and IgM) response to sheep erythrocytes [an immune response] (Section I.A.1, the IRIS Oral RfD Summary) as the critical effects for Aroclor 1254. Reduced birth weight was selected as the critical effect for Aroclor 1016.

For all other chemicals of concern, a similar type of analysis was conducted. The critical health endpoints for the other chemicals are provided in Appendix I, Tables 5.1 and 5.2 for non-cancer and Table 6 for cancer and the calculated cancer risks and non-cancer health hazards (Appendix I, Tables 7 and 8). Although page 6-23 of the RI Report only lists the critical effects that were combined together for the organ-specific Hazard Index, the development of the toxicity values incorporated information on the other health effects where information was available.

Consistent with EPA Superfund risk assessment guidance including RAGS Part A (available at: www.epa.gov/superfund/programs/risk), the BHHRA evaluates the increased risk above the background cancer. Consistent with the Agency's guidelines on chemical mixtures (described above) the BHHRA calculated total risk by adding together the cancer risks and non-cancer health hazards from the individual chemicals.

In preparing this response, EPA reviewed the studies cited in the comment. EPA is not providing comments specific to these studies because they are not relevant to the site-specific conditions. EPA's risk assessment evaluated chemical mixtures using appropriate guidance identified above and using conservative assumptions to calculate cancer risks and non-cancer health hazards. This approach is not in conflict with the references cited by the commentor.

Comment #G.6: *Given that the Cornell-Dubilier site is contaminated with numerous chemicals, EPA needs to be asking whether single-chemical estimations of hazard are adequate to protect public health and safety. Here are references to 5 studies showing that "insignificant" amounts of several individual chemicals can combine to produce significant health effects: Elisabete Silva and others, "Something for 'Nothing' -- Eight Weak Estrogenic Chemicals Combined at Concentrations below*

NOECs Produce Significant Mixture Effects," Environmental Science & Technology Vol. 36, No. 8 (2002), pgs. 1751-1756. Available at *http://www.rachel.org/library/getfile.cfm?ID=371*

Nissanka Rajapakse and others, "Combining Xenoestrogens at Levels below Individual No-Observed Effect Concentrations Dramatically Enhances Steroid Hormone Action," Environmental Health Perspectives Vol. 110, No. 9 (September 2002), pgs. 917-921. Available at *http://www.rachel.org/library/getfile.cfm?ID=370*

Nissanka Rajapakse and others, "Defining the Impact of Weakly Estrogenic Chemicals on the Action of Steroidal Estrogens," Toxicological Sciences Vol. 60 (2001), pgs. 296-304. Available at *http://www.rachel.org/library/getfile.cfm?ID=369*

Joachim Payne and others, "Mixtures of Four Organochlorines Enhance Human Breast Cancer Cell Proliferation," Environmental Health Perspectives Vol. 109, No. 4 (April 2001), pgs. 391-397. Available at *http://www.rachel.org/library/getfile.cfm?ID=368*

Ana M. Soto and others, "The Pesticides Endosulfan, Toxaphene, and Dieldrin Have Estrogenic Effects on Human Estrogen-Sensitive Cells," Environmental Health Perspectives Vol. 102, No. 4 (April 1994), pgs. 380-383. Available at *http://www.rachel.org/library/getfile.cfm?ID=367*

It is noteworthy that none of these studies is cited in the bibliography accompanying the risk assessment for the Cornell-Dubilier site.

EPA Response: See EPA response to Comment G.5, above.

Comment #G.7: *EPA also needs to ask whether the toxicologic data, upon which its risk assessment is based, adequately represents modern toxicological science. For example, here are references to five studies showing that the timing of exposure to a toxicant is crucial to observing an effect. A particular exposure at one time in the life of an organism may produce no effect while the same exposures occurring at a different time in the life of an organism may produce a serious effect. This means that much of the toxicological information upon which risk assessments are based is conceptually flawed, outdated and untrustworthy for making risk judgments. See Beverly S. Rubin and others, "Perinatal Exposure to Low Doses of Bisphenol A Affects Body Weight, Patterns of Estrous Cyclicity, and Plasma LH Levels," Environmental Health Perspectives Vol. 109, No. 7 (July 2001), pgs. 675-680. Available at* *http://www.rachel.org/library/getfile.cfm?ID=456*

See also K.S. Landreth, "Critical windows in development of the rodent immune system," Human and Experimental Toxicology Vol. 21, Nos. 9-10 (Sep-Oct, 2002), pgs.493-498 Available at *http://www.rachel.org/library/getfile.cfm?ID=457 And: M.C. Garofolo and others, "Developmental toxicity of terbutaline: Critical periods for sex-selective effects on macromolecules and DNA synthesis in rat brain, heart, and liver," Brain Research Bulletin Vol. 59, No. 4 (Jan. 15, 2003), pgs. 319-329 Available at http://www.rachel.org/library/getfile.cfm?ID=458*

And T.A. Lindsley and L.J. Rising, "Morphologic and neurotoxic effects of ethanol vary with timing of exposure in vitro," Alcohol Vol. 28, No. 3 (Nov., 2002), pgs. 197-203; Available at http://www.rachel.org/library/getfile.cfm?ID=459
And: M.R. van den Heuvel and R.J. Ellis, "Timing of exposure to a pulp and paper effluent influences the manifestation of reproductive effects in rainbow trout," Environmental Toxicology and Chemistry Vol. 21, No. 11 (Nov., 2002), pgs. 2338-2347. Available at http://www.rachel.org/library/getfile.cfm?ID=460
It is noteworthy that none of these studies is cited in the bibliography accompanying the risk assessment for the Cornell-Dubilier site.

EPA Response: The risk assessment evaluated critical windows of effect where such studies were available for the chemicals of concern found at OU2. For example, the Reference Dose for Aroclor 1016 (www.epa.gov/iris - chemical file for Aroclor 1016) is based on exposures to Rhesus monkeys during pregnancy with additional information presented regarding follow-up studies on neurobehavioral effects among the off-spring. The evaluation of vinyl chloride, another chemical of concern at OU2, is based on an IRIS assessment that provides separate cancer slope factors, based on continuous lifetime exposure from birth and exposure during adulthood (www.epa.gov/iris - chemical file for vinyl chloride). As part of the IRIS process, EPA updates the chemical files as appropriate to address new scientific studies on the chemicals currently on the database. For example, the 1996 reassessment of PCB cancer toxicity was an update to a previous IRIS chemical file (PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures, EPA ORD, EPA/600/P-96/001F, 1996, available at: www.epa.gov/ncea publications). Further, EPA has an ongoing process to update the risk assessment guidelines and guidance documents to address new science as appropriate.

In preparing this response, EPA reviewed the studies cited in the comment. EPA is not providing comments specific to these studies because they are not relevant to the site-specific conditions. EPA's risk assessment evaluated chemical mixtures using appropriate guidance identified above and using conservative assumptions to calculate cancer risks and non-cancer health hazards. This approach is not in conflict with the references cited by the commentor.

Comment #G.8: *In sum: The EPA has spent large sums of money evaluating minutiae, but has missed the big picture at the Cornell-Dubilier site.*

EPA Response: The RI/FS for OU2 was conducted in accordance with EPA guidelines and policies and Superfund guidance as described above. The purpose of the risk assessment is to determine whether the Site poses an unacceptable risk to human health or the environment under current- or future-use scenarios, to assist EPA in assessing the need to take an action and the scope of that action. The BHHRA concludes that the Site does pose unacceptable risks.

While the scientific papers cited in comments G.5, G.6, and G.7 are generally relevant to the methods by which the Agency evaluates risk, the commentor's interpretation of the papers cited is not relevant to the specifics of this Site, given the conclusions of the BHHRA.

Comment #G.9: *Adequate cleanup of the Cornell-Dubilier site was not even offered to the public as an option at the public hearing July 13, 2004 in South Plainfield. All of the options that EPA proposed would* result in leaving substantial contamination on the site.

EPA Response: See EPA response to Comment G.3, above.

Comment #G.10: *Unless the site is cleaned up to background levels, it will continue to be a source of contamination in central New Jersey and beyond. The second law of thermodynamics guarantees that low levels of contamination will continue to escape from the site onto nearby properties, then into the larger environment beyond.*

EPA Response: See EPA response to Comment G.1, above.

Comment #G.11: *The risk assessment technique used to determine "safe" exposures to "maximally exposed" individuals has the unintended (but now well-understood) consequence of allowing "safe" levels of contamination to enter the environment where they are joined by other amounts of toxicants that other risk assessments have deemed "safe." The cumulative impact of these low-level releases (sanctioned by the flawed risk assessment* *technique) is a badly contaminated environment worldwide -- but most specifically in New Jersey (more on this below).*

EPA Response: See EPA response to Comment G.2, above.

Comment #G.12: *EPA's (and Foster-Wheeler's) risk assessment techniques are woefully outdated and have failed to incorporate recent scientific information about the importance of timing of toxic exposures, and about the cumulative impacts of exposures to many low-level contaminants simultaneously.*

EPA Response: See EPA response to Comment G.2, G.5, G.7 and Comment G.8, above.

Comment #G.13: *New Jersey is already contaminated at hazardous levels and no additional contamination is acceptable. Therefore, the Cornell-Dubilier site must be cleaned up entirely, leaving no residual contamination to harm future generations. According to New Jersey Department of Environmental Protection's Final Report of the New Jersey Comparative Risk Project (Trenton, N.J.: N.J. Department of Environmental Protection, July, 2003), available at* http://www.state.nj.us/dep/dsr/njcrp/ *"Among the effects of various of the PCB congeners are neurodevelopmental retardation, decreased thyroxine levels, reproductive dysfunction, immune system suppression, carcinogenesis, and enzyme induction." (pg. 974) "The likely effects of PCBs... include breast cancer, non-Hodgkins lymphomas, liver and gall bladder cancers, pancreatic cancer, decreased circulating thyroid hormone, and prenatal effects that affect postnatal neurodevelopment." "Breast feeding transfers organochlorines from mother to infant (as much as 20-25% of prenatal maternal body burden) and results in an organochlorine intake in the range of 50-fold higher than adults on a body weight basis." (pg. 976) [IMPORTANT NOTE: Breast feeding is still the healthiest and best way to nourish an infant.] "As many as 2000 to 2500 cases of cancer per year may be attributable to PCBs in New Jersey. This is approximately one-third to one-half of the total incidence of breast, pancreatic and non-Hodgkins lymphatic malignancies in the state [of New Jersey]. There are however significant uncertainties in these estimates. There is also evidence that pre- and post-natal exposures to PCBs may have adverse effects on neurological development." (pg. 982) In other words, the people of New Jersey are already exposed to an excessive quantity of PCBs -- enough PCBs to produce 2000 to 2500 cases of cancer each year. The Cornell-Dubilier site, after* *it is cleaned up, should not contribute one iota to this already-unacceptable situation.*

EPA Response: See EPA response to Comments G.1, G.2., G.5, G.7, and G.8, above. Special note is made regarding the information presented regarding EPA's cancer reassessment of PCB cancer toxicity available at www.epa.gov/ncea (PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures, EPA ORD, EPA/600/P-96/001F, 1996) and the IRIS chemical file which describe EPA's Weight of Evidence Classification for PCBs. Also relevant is the EPA IRIS chemical assessments for non-cancer health effects, in the IRIS chemical files for Aroclor 1016 and Aroclor 1254 available at www.epa.gov/iris.

Comment #G.14: *EPA has offered no information indicating that the "engineering controls" proposed for the cleanup would endure as long as the hazards that EPA plans to leave buried on the site. EPA has offered no information indicating that humans -- using "institutional controls" -- have the ability to manage toxic sites in perpetuity (which is the duration of the hazard).*

EPA Response: See EPA response to Comment G.1, above.

Comment #G.15: *EPA personnel offered false and misleading answers to questions posed by the public during the public meeting July 13 in South Plainfield. This is a violation of professional ethics and should be investigated by the EPA Inspector General. By way of this testimony for the public hearing record, I am formally requesting such an investigation.*

EPA Response: Although EPA believes that the information presented at the July 13, 2004 was factually accurate and based on appropriate EPA guidance, the request has been forwarded to the EPA Inspector General.

Comment #G.16: *I request that in future EPA put all documents related to this site on the world wide web to make "public participation" as easy as it should be, and as easy as EPA says it wants it to be.*

EPA Response: EPA is committed to having relevant site documents available to the public. For example, EPA maintains a repository at the South Plainfield Library and at EPA's office, containing the administrative record for the Site. In addition, EPA's web page contains information about the Superfund program and site specific information for each of the sites on the NPL, including the CDE Site. EPA has not placed all documents related to this Site on the internet.

Comment #G.17: *At the Cornell-Dubilier site, which offers such a clear example of a site that will continue to release toxicants into the environment for decades (perhaps aeons), to come, EPA has an opportunity to "turn the corner" and set a wonderful new example in the history of site cleanups. A precautionary approach, instead of a flawed risk assessment approach, would dictate a much more aggressive and thorough cleanup of the site than EPA has considered up to this point. (A precautionary approach to site cleanups is discussed in the draft paper found here: http://www.rachel.org/library/getfile.cfm?ID=363 .)*

EPA Response: See EPA response to Comment G.8, above.

H. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD FROM CORNELL-DUBILIER ELECTRONICS, INC. AND DANA CORPORATION

I. Introduction

In July 2004, the United States Environmental Protection Agency (EPA) released for public comment its Proposed Plan for Operable Unit 2 (OU2) at the Hamilton Industrial Park Superfund Site (the "Site"). EPA's Proposed Plan for on-Site soils consists primarily of off-site disposal coupled with on-Site low temperature thermal desorption. However, when measured against the standards required to be considered under the National Contingency Plan (NCP) and EPA's own remedy selection guidance, the Proposed Plan cannot withstand scrutiny. Simply put, the Proposed Plan for on-Site soils recommends the wrong remedial action.

EPA's Proposed Plan is impractical to implement and will entail unnecessary risk, delay and cost. Although EPA characterizes its remedy as involving "low temperature" thermal desorption, a genuinely low temperature remedy cannot desorb high boiling point PCBs from soils. To cause PCBs to desorb from soils requires a high temperature remedy. Such a high temperature remedy carries the risk of converting PCBs into far more hazardous substances such as dioxins and furans. Moreover, thermal desorption at high temperature will create significant additional risks to the local community from noise, dust, and odors. Indeed, the approach selected in the Proposed Plan would result in approximately 20,500 separate truck trips through the local community -- many of which would be hauling the most highly contaminated soils and debris identified by EPA for removal from the Site. Because EPA has not properly characterized its proposed remedy as involving high temperature thermal desorption, EPA has not adequately given notice of its plans to the community and the public sufficient to *comply with notice and public comment requirements under CERCLA and the National Contingency Plan.*

Even if it were possible to desorb PCBs from soils using low temperature thermal desorption, EPA has failed to take into consideration the evidence from the Remedial Investigation report documenting soil characteristics and large quantities of debris that would hinder effective use of thermal treatment and will likely create significant additional risks. Debris and rocks must also be screened out, removed and further managed prior to thermal desorption of the screened residuals. Other soils, containing the highest levels of PCB and VOC contamination and mixed with debris, will have to be excavated and transported for off-site disposal, creating additional risk to the local community and on-site workers. Further, EPA's proposal to run its thermal desorption operation only during daylight hours is unrealistic given that part-time operation of the thermal equipment will significantly impair its efficiency and greatly extend the duration of the thermal operation.

EPA's Proposed Plan ignores the available information about the Site and about the technology of thermal desorption -- much of which EPA itself has gathered or published. Although EPA claims that thermal desorption is a "treatment" remedy, that is not the case. As EPA explicitly recognized in its 1997 guidance, "[t]hermal desorption is a physical separation process, not a destruction technology" (USEPA, 1997). Presumably, after completing thermal desorption of contaminated soils at the Site, the remedial action will include steps to dispose of or destroy the PCBs which have been separated from those soils. The Proposed Plan, however, fails to identify what will happen to the separated PCBs or to discuss the risks and costs associated with the ultimate treatment of the PCBs.

Also troubling is EPA's estimate of the cost of thermal desorption at the Site. Specifically, in the OU2 Feasibility Study on which EPA bases its Proposed Plan, EPA utilizes a unit cost for thermal desorption of $101 per ton (it is noted that EPA did not provide documentation for this unit cost). Significantly, EPA itself has acknowledged that thermal desorption is less efficient and substantially more expensive when PCB soils are involved (USEPA, 2001). Indeed, at other Superfund sites where EPA has utilized thermal desorption, the treatment cost per ton has been significantly higher than EPA's assumed $101 per ton -- higher by a factor of up to 400%.

In the end, EPA's Proposed Plan will result in an OU2 remedy that is likely to take six or more years to implement; is likely to cost in the range of $90 million; and will be extremely difficult to implement without enormous delays in time, increases in risk to the local community, and significant noise and odor problems. In marked contrast to the remedy EPA proposes, at least two alternative remedies which will also be protective of health and the environment, are permanent, will be easier and faster to implement, and are substantially less expensive, were overlooked by EPA. The first alternative remedy is the one proposed by the HIPG to the National Remedy Review Board (the "NRRB") in a letter dated July 16, 2003. That remedy had the following elements:

- *Excavation and off-site disposal of principal threat material, including the material within the capacitor/debris disposal area which represents the primary source of principal threat material (both PCBs and VOCs).*
- *Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.*

The second alternative remedy, which is described in greater detail in Section III of this document, is based on solidification and stabilization and has the following elements:

- *Targeted excavation and off-site disposal of principal threat material within the capacitor disposal area, which constitutes the primary source of principal threat material (both in terms of PCBs and VOCs).*
- *Separation of debris from those soils in other areas of the Site having contaminant concentrations constituting principal threats. Soils generated from the debris separation process will be placed back in the treatment area, and the separated debris will be segregated and disposed of off-site.*
- *Treatment by means of in-situ solidification/stabilization (S/S) of soils having contaminant concentrations constituting principal threats. In areas where principal threat levels are limited to the shallow soils or cannot otherwise be treated in-situ (e.g., floodplain soils), these surface soils will be consolidated on-site into the larger area(s) which are subject to treatment. In addition, soils in designated clean utility corridors for purposes of Site*

redevelopment will be removed and consolidated prior to treatment.

- *Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.*

The Hamilton Industrial Park PRP Group, consisting of Cornell-Dubilier Electronics, Inc. and Dana Corporation, submits these comments documenting (1) that EPA's Proposed Plan recommends a remedial alternative for OU2 which does not comply with the standards of the NCP and EPA's guidances, and (2) that EPA has overlooked the most appropriate remedial actions for OU2.

In order to provide an expert review of EPA's Proposed Plan, the HIPG retained the Battelle Memorial Institute (Battelle) and de maximis, inc. (de maximis), which together have substantial field experience designing and implementing all of the remedial technologies evaluated by EPA in the OU2 Feasibility Study. Based on a careful review the Site-specific data and consideration of the experience with these technologies, the evaluation conducted by Battelle and de maximis has raised serious concerns. It has also lead the HIPG to recommend alternative remedies which better meet the EPA's own remedy selection criteria. The specific comments on EPA's Proposed Plan are provided in Section II. A discussion of the HIPG's recommended alternatives is provided in Sections III and IV. Finally, Section V incorporates the HIPG's prior comments to EPA on EPA's proposed remedial action objectives, including characterization of principal threat material for OU2.

EPA Response to the Introduction: The foregoing comments appeared as an introduction to the Hamilton Industrial Park PRP Group's comments. The comments that follow provide further detail and generally reiterate the Introduction, and EPA's responses appear below.

The PRP Group suggests in the Introduction that EPA did not follow the NCP in developing its Proposed Plan. No specific comments that follow address how EPA's remedial planning efforts were deficient. The PRP Group provides several alternative remedies, and includes a tabular "Summary of Comparative Analysis of Soil Remedial Alternatives" comparing a PRP preferred alternative, "Modified Alternative S-4", to the Preferred Alternative, which is a hybrid of Alternatives S-3 and S-5. This table is included in the PRP Group's comments, which are an attachment to this

Responsiveness Summary, and provide the PRP Group's take on a nine-criteria evaluation of EPA's Preferred Alternative.

EPA has three observations with regard to the PRP Group's table:

(1) As discussed in more detail below, the PRPs' Modified Alternative S-4 can be differentiated from EPA's Alternative S-4 in several ways, and EPA will address these differences below; therefore, with regard to this table, it is not a direct comparison of the EPA's Alternatives S-4 and S-3/S-5.

(2) The PRP Group changed a number of assumptions with regard to EPA's Alternative S-3/S-5, which are discussed in some fashion in the PRP Group's comments, and EPA's responses, below. When comparing EPA's nine-criteria evaluation to this table, it should be noted that EPA considered <u>all</u> the remedial alternatives and evaluated their advantages and disadvantages, as required by the NCP and EPA guidance, whereas the simplified evaluation completed by the PRP Group elects to highlight the advantages of its preferred remedy and emphasize the deficiencies of the Selected Remedy. The PRP Group's method is not consistent with the requirements of the NCP.

(3) The PRP Group's interpretation of "Agency Acceptance" does not evaluate NJDEP's position on the proposed remedy. NJDEP supports EPA's Selected Remedy.

II. Evaluation of EPA's Preferred Remedy

II.A. Overview of Comments on EPA's Proposed Plan

EPA's proposed "Low Temperature Thermal Desorption" (LTTD) based remedy is neither low temperature nor complete treatment, understates potential costs and environmental and health risks, and overstates the likely implementability of the Preferred Remedy.

The remedy recommended in EPA's Proposed Plan is incorrectly characterized as a low temperature treatment system and based on the characteristics of the contaminants to be treated will in fact require high temperature treatment. In addition, EPA's stated intent to have the system operate on a cyclic basis, i.e. only 8-10 hours per day to address community concerns, will *create enormous implementability problems and will make it difficult to achieve necessary operational efficiencies in the desorption equipment and the associated pollution control equipment. These implementability issues, coupled with the specific challenges at the Site - most importantly EPA's decision to treat by means of desorption the highest levels of contaminants which it recognizes will be least likely to desorb effectively or will present significant handling issues - increases the potential risks to workers and the community, including the potential formation and/or release of dioxins, furans and other hazardous constituents.*

Additionally, thermal desorption will cost far more than assumed by EPA. If EPA used the thermal desorption unit treatment cost reported by EPA for other National Priority List (NPL) Sites where PCBs have been treated, the cost for the Preferred Alternative would increase by more than $25 million. Moreover, the time period for completion of thermal desorption-based remedy is likely to be significantly longer than that estimated in the Proposed Plan, further increasing the estimated costs.

Some of the principal concerns with the Proposed Plan are:

- *Genuinely "low" temperature thermal desorption will not work at the Site. Thermal desorption (TD) is typically assumed to occur between 200-1,000 °F. While the break point between "low" and "high" is not defined by EPA, "low temperature" is generally considered to range from 200-600 °F (appropriate for petroleum hydrocarbons and VOCs), with "high temperature" occurring between 600-1,000 °F (appropriate for PAHs, PCBs and pesticides). The PCBs at the Site have boiling points ranging from 689-734 °F for Aroclor 1254, and from 725-788 °F for Aroclor 1260, which would suggest a reasonable minimum target treatment temperature of 800 °F. This is clearly at the "high" end of the temperature range, thereby constituting high temperature thermal desorption (HTTD).*

- *Higher temperature thermal desorption is likely to generate more toxic hazardous substances, since dioxins and furans are formed when PCBs and particulates are maintained in the 400-650 °F temperature range. This will occur if soils and/or treatment residuals are inadequately or unevenly heated/cooled.*

- *Contrary to EPA's assertion, the Proposed Plan does not* *result in complete "treatment as a principal element". Thermal desorption ("TD") is a separation remedy; it is not a destruction technology. Thermal desorption simply uses heat to evaporate and separate the PCBs from soils. The off-gassed PCBs must then either be condensed and incinerated off-site, or be incinerated on-site in a secondary combustion chamber attached to the TD. EPA's Proposed Plan does not state how EPA intends to handle the condensed PCBs. To the extent that the Proposed Plan contemplates on-site incineration of the condensed PCBs, EPA has not addressed either the delay in obtaining the necessary permit equivalency under the Toxic Substances Control Act or the impact to the local community of having such an incineration facility at the Site with its concomitant problems of particulate control and the troubling risk that treatment residuals (e.g. furans and dioxins) from incineration will be more toxic than the original waste. To the extent that the Proposed Plan contemplates off-site incineration, EPA has not addressed the costs and risks associated with the handling, transportation, and off-site incineration of the condensed PCB liquids.*

- *The OU2 Feasibility Study recognizes that much of the highly contaminated and, therefore, highest risk soils are not likely to be suitable for TD because of debris mixed in the soils. Thus, EPA's Proposed Plan assumes that approximately one-half of the 107,000 cubic yards of principal threat soils, i.e. 53,500 cubic yards, will not go into the thermal unit, but instead will be transported off-site through the South Plainfield community. This approach is inconsistent with EPA's recognition that excavation and transportation off-site of such a large volume of soil presents high short-term risks (see the Proposed Plan at page 19).*

- *Thermal Desorption poses significant implementability problems at the Site. EPA's proposal to limit operation of the thermal description system to daylight hours is unrealistic. Thermal desorption equipment and its associated pollution control equipment are designed to run efficiently on an around-the-clock basis. To stop and start the system every day would grossly impair the system efficiency and add years to the duration of the operation. Second, the debris mixed in with the contaminated soils will limit the soils which can actually be put into a thermal desorption system. Third, EPA has not fully addressed the significant noise and* *odors which will be caused by the operation of a thermal desorption system, particularly since it is likely that the system will have to be operated on a 24 hour basis.*

- *EPA has not fairly estimated the likely cost of a thermal desorption system at the Site. EPA's characterization of LTTD, combined with excavation, as being "cost effective... [with] a comparable cost to other alternatives" is not accurate in light of EPA's own reported costs for TD at other PCB-contaminated NPL Sites, as well as the complexities specifically affecting the Site. EPA uses a TD treatment cost of $101 per ton when EPA's experience at other Superfund sites involving PCB contaminated soils is significantly higher. Such circumstances would add $25 million or more when appropriate allowances for expected Site-specific issues are taken into account (see also Section II.D and Appendix A of these comments). This cost differential could be significantly higher if the thermal operation is in fact limited to 10 hours per day, or if additional handling or treatment of thermal treatment residuals is required.*

- *EPA's Proposed Plan incorrectly characterizes the ability of thermal desorption to "allow the property to be used for the reasonably-anticipated future land use" (see the Proposed Plan at page 21). Assuming that EPA only uses the thermal desorption unit 8 to 10 hours per day as described in the Proposed Plan, and no operating problems are encountered, the actual TD portion of the Site remedy will take at least 2.8 years. Coupled with the detailed design and performance testing associated with the TD process, the earliest date that the Site could be ready for redevelopment would be at least 6 years in the future using EPA's 20 tons per hour throughput rate, with a more likely remedy completion date in excess of 10 years when more realistic treatment throughput scenarios are used. However, even this schedule is optimistic, since EPA's proposed operating scenario is precisely the mode of operation that is most likely to create mechanical problems with the TD system.*

The specific comments on EPA's Proposed Plan are provided below.

EPA Response to Section II.A.: As with the Introduction, this section summarizes a series of comments on EPA's Preferred Alternative that are then explored in more detail in Section II.B. EPA's responses appear in the next section.

II.B. Thermal Desorption of On-Site Soils Requires Higher Temperatures Than Indicated in the Proposed Plan; is Not "Treatment" of PCBs Under the NCP; and Poses Significant Implementability Risks and Challenges

EPA has incorrectly identified the thermal desorption technology that applies to the Site as being "low temperature". In point of fact, the proposed use of low temperature, rather than high temperature thermal desorption for portions of the PCB and chlorinated VOC-impacted soils would not achieve the remedial goals articulated in the Proposed Plan.

Thermal desorption is a process through which contaminants typically are heated to a temperature exceeding their respective boiling points; this process physically separates or "desorbs" contaminants from the soil. The process is generally broken down into two types of remedial technologies: low temperature thermal desorption (LTTD) and high temperature thermal desorption (HTTD). According to the Federal Remedial Technologies Roundtable (FRTR)[1], Remediation Technologies Screening Matrix and Reference Guide, Version 4.0[2], a group in which EPA participates, it is high temperature desorption, not low temperature, that is the relevant thermal desorption technology for high molecular weight PCBs such as those found at the Site. LTTD typically only heats contaminated media to temperatures ranging from 200 °F to 600 °F and is used most often for remediating petroleum hydrocarbon contamination and other contaminants having lower boiling points.

[PRP Group's Footnotes:]
[1] The Federal Remediation Technology Roundtable (FRTR) was established in 1991 as an interagency committee to exchange information and to provide a forum for joint action regarding the development and demonstration of innovative technologies for hazardous waste remediation.
[2] See http://www.frtr.gov/ matrix2/section4/4-26.html.

Sites using thermal desorption to address PCB-contaminated soils generally employ significantly higher temperatures than those typically characterized as "low temperature". In fact, most sites contaminated by higher molecular weight compounds employed temperatures generally ranging from 600 °F to 1,000 °F. Unfortunately, EPA does not appear to have adequately considered the conditions specific to this Site, notably the fact the PCBs *at the Site have boiling points ranging from 689-734 °F for Aroclor 1254, and from 725-788 °F for Aroclor 1260. Such boiling points for the site-specific contaminants would suggest a reasonable <u>minimum</u> target treatment temperature of 800 °F, clearly at the "high" end of the temperature range.*

> **EPA Response II.B.1:** EPA characterizes LTTD as operating at temperatures up to 1,200 °F. As indicated in the comment, the PCBs at OU2 have boiling points ranging from 689-734 °F for Aroclor 1254, and from 725-788 °F for Aroclor 1260, which would suggest a reasonable minimum target treatment temperature of 800 °F. Therefore, the anticipated treatment temperature is within the operating temperature range for LTTD systems. These temperatures would adequately treat the VOC contamination as well.

Treatment of off-gases differs significantly from LTTD to HTTD, in that the off-gassed hydrocarbons and VOCs from the LTTD process can be readily treated by catalytic or thermal oxidation. On the other hand, as TD simply uses heat to evaporate and separate the PCBs from the soils, the off-gassed PCBs must then either be condensed and transported off-site for incineration or incinerated on-Site in a secondary combustion chamber attached to the TD. On-Site incineration of off-gassed PCBs will require a "trial burn" to demonstrate the required 99.9999% Destruction/Removal Efficiency for PCBs specified under the Toxic Substances Control Act. Combustion temperatures of approximately 2,200 °F for greater than a 2 second residence time are required to meet this requirement. This demonstration typically presents up to a year delay in remedy implementation due to permit equivalency issues.

> **EPA Response II.B.2.:** Several well-established combinations of methods have been used to address vapor-phase treatment, collection of air-borne particulates, and treatment residuals from LTTD units, and in its experience with LTTD, EPA has found that right combination of technologies can be developed in remedial design. Deferment of decisions with respect to the specific treatment technologies used is a common approach to remedy selection. EPA assumes that the comment focuses on thermal oxidation because it can manifest more implementation issues than other treatment methods, and can have more administrative delays. The LTTD system would be equipped with the necessary particulate and vapor collection systems to ensure efficient operating conditions. The concern raised in the comment will be evaluated during the remedial design.

Finally, and of significant concern from the perspective of public health and perception, there is a real risk that thermal desorption will create treatment residuals more toxic than the original waste. Unlike the case with non-thermal technologies, TD must be carefully and effectively managed so as not to create dioxins and furans, which are formed when PCBs and particulates are maintained in the 400-650 °F temperature range, such as (1) when TD units have a bag house after the primary or desorption chamber; or (2) when heat transfer surfaces (such as boilers or heat exchangers) are present. As previously noted, TD units using off-gas incineration must use some form of bag house for particulate control, and those using condensation must have heat exchangers to cool the gases.

These concerns about the limitations of LTTD arise from the experience at other NPL sites, including Outboard Marine Corporation, ReSolve, Wide Beach Development and the Industrial Latex Sites. In addition, thermal desorption of PCBs was considered and then abandoned due to insufficient soil characterization and inefficient treatment at the Universal Oil Products Site and the Caldwell Trucking Site.

EPA Response II.B.3.: EPA has successfully implemented LTTD systems at Superfund Sites in Region 2 and across the nation. The site-specific conditions do not prevent the use of LTTD at OU2 of the CDE Site, and many of the same conditions that may limit the effectiveness of LTTD for portions of OU2 also limit the effectiveness of the PRP Group's preferred remedy (solidification without SVE).

EPA applies the lessons learned at other Superfund sites to its approach to selecting and implementing remedial actions; however, site-specific conditions vary from site to site, as emphasized by the examples mentioned by the PRP Group. The Industrial Latex Site is in Region 2 and is considered an example of the successful use of LTTD to treat PCB-contaminated soils. At the Universal Oil Products Site, a thermal treatment remedy was implemented to address some site soils, but NJDEP (the lead agency) elected not to treat all soils for which LTTD would have been effective because of odor concerns unrelated to PCB contamination. Instead, NJDEP turned to off-site disposal for the balance of the contaminated soils. At the Caldwell Trucking site, EPA selected a thermal treatment remedy in 1986, primarily to address volatiles. Subsequently, EPA issued a ROD Amendment, selecting an off-site disposal, SVE and solidification remedy (comparable to Alternate S-4). Again, PCB issues were not central to the remedial decision-making at the Caldwell Trucking site.

Since neither the OU2 Feasibility Study nor the Proposed Plan suggest that HTTD was analyzed or considered as appropriate for this Site, EPA at a minimum has an obligation to clarify the proposed technology and reissue the Proposed Plan for public comment. If EPA plans to pursue a HTTD remedy, the members of the public must be informed of the implications of high temperature treatment and be afforded the opportunity to express their views on an informed basis. In the end, though, neither LTTD nor HTTD are appropriate for use at the Site, because both technologies present health and environmental pollution risks and implementability concerns that are not presented by other, more cost-effective technologies.

EPA Response II.B.4.: EPA presented a range of remedial alternatives in the Proposed Plan after careful analysis during the FS. As discussed in more detail in the ROD Decision Summary, EPA held a series of public information sessions during the development of the FS, and emphasized the treatment options available for PCB-contaminated soil, including the use of thermal treatment technologies (LTTD and incineration). The Proposed Plan and EPA's oral presentation during the public meeting described EPA's Preferred Alternative. There were few community concerns, either written or oral, regarding the use of LTTD at OU2. As noted above in Response II.B.1, EPA does not consider the treatment technologies that will be used at OU2 to be HTTD. EPA's extensive efforts to inform the public at this Site, which exceed statutory and regulatory requirements, are not deficient because the PRP Group views the technology to be used at OU2 as HTTD as opposed to LTTD.

1. LTTD is not a complete "treatment technology"
The Proposed Plan's selection of LTTD as a preferred remedy because it is a "treatment technology" for PCBs is misleading. EPA incorrectly describes LTTD as a process "whereby contaminants are typically destroyed" (see the Proposed Plan at page 14). This is inaccurate. LTTD is not a destruction technology; rather it is a transfer technology which concentrates the contamination in other media. As explicitly recognized in EPA's own guidance, "[t]hermal desorption is a physical separation process, not a destruction technology" (USEPA, 1997).

For true destruction and thus complete treatment of PCBs to *occur, incineration is required. Since TD does not destroy the PCBs and only separates them from the soils, there must also be a plan for managing the residuals. Such a plan, which is not described in EPA's Proposed Plan, may involve either shipping concentrated PCB residuals off-site in tanker trucks or destroying them in an on-site incineration unit. Once again the absence of information about EPA's intention with respect to the separated PCBs renders the public notice provision of the Proposed Plan (as required by the NCP) to be inadequate.*

Each of the potential residuals management options poses distinct risks to both on-site workers and the surrounding community which have not been adequately disclosed or addressed in either the OU2 Feasibility Study or the Proposed Plan. In addition, if EPA plans to use either high temperature TD (since LTTD is unlikely to work as noted above) or thermal oxidation to destroy the TD treatment residuals, the cost, time delay, and potential public concern implications must be addressed.

EPA Response II.B.5.: Refer to EPA Response II.B.2. The FS discusses LTTD at length, and page 14 of the Proposed Plan states "LTTD is a physical separation process", and indicates that it would be coupled with a second vapor phase treatment technology to manage contaminants liberated from the soils. The distinctions between LTTD and an incinerator are also discussed in the FS and in EPA guidance. Mechanical design features and process operating conditions vary considerably among the various types of LTTD systems. EPA believes that the parties performing the work should be allowed to choose the type of LTTD system to be used at OU2, including the method used to manage the desorbed contaminants. The specific configuration of the system, based on site-specific conditions, would be developed during the remedial design.

EPA has adequately characterized the Preferred Alternative in the Proposed Plan and has met the public notice provisions required by the NCP. The Selected Remedy poses short-term risks associated with treating soils on-site, as discussed in the Short-term Effectiveness section of the Proposed Plan and Decision Summary of this document. Indeed, all the active remedial alternatives pose short-term risks; and EPA discussed and compared all these risks in the Proposed Plan and this document, as required by the NCP. Air emissions and treatment residuals derived from on-site treatment have been successfully managed at many NPL sites. As discussed in the Proposed Plan, proven procedures including engineering controls, personnel protective equipment and safe work practices would be used to address potential impacts to workers and the community.

2. The OU2 Feasibility Study and the Proposed Plan Do Not Provide a Supportable Basis for Determining that Thermal Desorption Will Work at this Site.

Without the benefit of treatability studies,[3] EPA has chosen to apply a technology to precisely the type of soils that it recognizes are most difficult to effectively treat by means of thermal desorption. EPA recognizes that LTTD cannot cost-effectively treat soils having high PCB and VOC concentrations, significant variability in particle size, nor soil with a significant volume of debris or rocks greater than 2"diameter (see the Proposed Plan at page 14). These are precisely the types of conditions that EPA has identified as affecting the principal threat soils at the Hamilton Industrial Park Site.

[PRP Group Footnote]

[3] EPA has engaged in no treatability testing for thermal desorption at this Site, despite its own guidance that such testing "is often used at the remedy screening level to provide a quick and relatively inexpensive indication of the appropriateness of TD as a remedial technology." Engineering Forum Issue Paper: Thermal Desorption Implementation Issues (USEPA, 1997), and "Remedy selection studies yield data that verify that the technology can meet expected cleanup goals, provide information in support of the detailed analysis of alternatives, and give indications of optimal operating conditions." Guide for Conducting Treatability Studies under CERCLA: Thermal Desorption Remedy Selection, Interim Guidance" (USEPA, 1992)

EPA Response II.B.6.: LTTD is a proven technology for addressing soils contaminated with PCBs and VOCs, and a treatability study is not necessary to determine whether OU2 soils would be amenable to treatment. As indicated in the Proposed Plan and this Decision Document, EPA expects that a certain quantity of the contaminated soil at OU2 will not be amenable to treatment using LTTD. The Decision Summary of this document discusses a number of Site-specific conditions where off-site disposal would be employed instead of LTTD. In fact, the flexibility offered by the Selected Remedy for addressing the heterogenous OU2 soils is one of its significant advantages.

a) Site specific media impediments to thermal desorption
Based on the information known about contaminated soils at the Site, particularly principal threat soils, thermal desorption will plainly meet with considerable impediments. For example, EPA knows that the principal threat soils contain very high concentrations of PCBs and are mixed with debris. These are exactly the conditions which are known to cause operational difficulties for thermal desorption.

EPA's technology roundtable organization, FRTR, has identified several conditions which limit the effective use of thermal desorption:

- *Specific particle size and materials handling requirements can impact applicability or cost at specific sites.*
- *Dewatering may be necessary to achieve acceptable soil moisture content levels.*
- *Highly abrasive or oversize feed can damage the processor unit.*
- *Heavy metals in the feed may produce a treated solid residue that requires stabilization.*
- *Clay and silty soils and high humic content soils increase reaction time as a result of binding of contaminants.*

Several of these limiting conditions described by FRTR are present at the Site.

The Hamilton Industrial Park Site has been used as an industrial and/or commercial site for about 70 years, resulting in significant non-soil materials being incorporated into the ground at the Site. Indeed, EPA describes Site soils as largely man-made fill, consisting primarily of cinders, ash, brick, glass, metal, slag, and wood fragments (see the Proposed Plan at page 4). Almost all thermal desorption systems are designed to accept materials no larger than 1 to 2 inches in diameter in order to provide adequate heating (and treatment) and to protect the TD equipment (particularly feed or treatment augers). Thus, most, if not all, of the soil at the Site must be screened, adding a costly step to the remedy and increasing the risk of exposure to workers and the neighboring community.

EPA reports that at one site the volume of soil remaining after processing soil for TD treatment was roughly 2/3 of that originally estimated because of the significant amounts of oversized material removed (USEPA, 1997). Oversized material which is screened will then need to be decontaminated and *disposed off-site, or otherwise managed. It is quite likely that only a fraction of the excavated materials will be of sufficient size to go through the thermal desorption unit at the Site, with the remainder to be trucked off-site for further treatment and disposal.*

Even after the soil at the Site has been screened, native soils that pass the screening test are still not likely to be appropriate for thermal desorption. Soils having a high proportion of sand and gravel are far easier to handle and treat than the finer silts, silty sands, ash, and fill encountered at the Site during the OU2 Remedial Investigation (see the Proposed Plan at Page 4 and the test pit records provided in the OU2 Remedial Investigation Report). In addition, the fill materials in the area targeted for treatment may include diatomaceous earth which was used on-Site[4] (see Page 1-3 of the OU2 Remedial Investigation Report). Moreover, when soil moisture content is higher than 20%, thermal desorption costs increase, fuel usage (and air emissions) increase, and treatment throughput is reduced. Given the perched water encountered at the Site and overburden soils described as dry to <u>saturated</u>, the moisture content of certain Site soils may well prove problematic. Unfortunately, the soil moisture data were not interpreted in the OU2 Feasibility Study to evaluate this particular issue.

[PRP Group Footnote]
[4] *Diatomaceous earth is a naturally occurring mineral derived from microscopic size fossilized remains of marine diatoms. It has high absorption capacity and low bulk density, which means these materials can be both substantially contaminated and become readily airborne.*

Heavy metals such as arsenic and lead have been identified in the soils at this Site. The Proposed Plan describes elevated concentrations of 23 different metals, with arsenic and lead detected at maximum concentrations of 1,060 mg/kg and 52,600 mg/kg, respectively. If off-gas incineration is chosen, then the arsenic and other metals will be transferred to and concentrated in the bag house particulate media, which will, in turn, require further treatment or off-site disposal to render it safe. Also, if the total or leachable concentrations of metals in the thermally-treated soils exceed regulatory limits, EPA's proposal of simply backfilling the treated soils will not be an option unless stabilization/solidification is also performed. As discussed in the next section, to the extent that solidification/stabilization will be utilized, there is no *justification for starting with thermal desorption. Solidification/stabilization can address all of the contaminants of concern and is available as a more cost-effective and equally protective alternate remedy (see Section III of these comments).*

> **EPA Response II.B.7.:** Refer to EPA Response II.B.6. As stated on page 14 of the Proposed Plan, EPA is aware that some soils can not be effectively treated with an on-site LTTD unit. Off-site disposal would be appropriate for the soils that are not amenable to treatment. Most soil types are amenable for treatment by LTTD systems; however, different soils may require varying degrees and types of pretreatment. For example, coarse-grained soils may require cushing; fine-grained soils that are excessively cohesive may require shredding; and soils with heavy metals may require stabilization with limestone. (EPA does not expect that solidification would be required, however.) Many of the same implementation constraints that the PRP Group identifies with regard to on-site LTTD would similarly constrain implementation of the PRP Group's preferred remedy (solidification without SVE). As described in the Proposed Plan, EPA considered the long-term effectiveness of LTTD to be substantially higher than that of solidification, with far fewer uncertainties.

b) Technology impediments to thermal desorption

EPA has not identified the specific type of thermal technology that it anticipates will be used at the Site. However, the selection of a specific thermal desorption technology will have a significant impact on implementability issues. At the Hamilton Industrial Park Site, EPA's OU2 Remedial Investigation reveals the presence of higher molecular weight PCBs that have boiling point temperatures ranging from 689-734 °F for Aroclor 1254, and from 725-788 °F for Aroclor 1260, which would suggest a reasonable minimum target treatment temperature of 800 °F, before they will desorb from the Site soils. This consideration, in turn, controls the type of thermal desorption equipment that may be effectively used at the Site. The most likely candidate technologies include indirect fired thermal desorption units with PCB off-gas condensation or direct-fired thermal desorption units with off-gas incineration -- each of which presents its own implementability issues. For example, if off-gassed PCBs are treated with on-site incineration, then Agency approval of the implementation will require a "trial burn" under the Toxic Substances Control Act. This process can cause up to a one year delay in implementation due to permit equivalency issues. Indirect fired units, while not subject to a TSCA trial burn, are *less available in the marketplace and typically have lower throughput rates (i.e., less than 10 tons per hour). This limited throughput could more than double the duration of treatment. Moreover, it is questionable whether a contractor for such a system could be found, given the duration of the operation and the restricted operating hours.*

No matter what technology is chosen, EPA's commitment to operate the TD system only 8-10 hours per day will undercut the reliability of both the TD machinery and the associated air pollution control equipment. It is well known that TD units run most effectively when they operate 24 hours per day, 7 days per week. For example, EPA's Cost and Performance Report for the Wide Beach Development Site notes "At Wide Beach, the ATP unit was operated continuously (24 hours a day and 7 days a week), excluding system down time to repair the mechanical problems discussed below (approximately two months [out of twelve months total operation]) and to perform routine maintenance (approximately three days per month)." Thermal desorption and air pollution control systems are designed to be brought up to operating temperatures, and then to maintain stable temperatures during operation. Contractors offering LTTD services typically prefer to operate 24 hours/7 days a week to maintain optimum soil and off-gas treatment and to maximize throughput (and minimize costs). Limiting work to daylight hours as suggested in the Proposed Plan would cause excessive thermal cycling, which could well result in equipment failure and significant downtime. This is particularly pertinent to the large rotating kiln type units used in direct-fired, higher throughput operations.

Moreover, even if thermal treatment could practically be operated for only 8 hours per day as EPA suggests, it could not be performed for the unit costs incorporated into the Proposed Plan's cost estimate. Discussions with treatment vendors indicate that while the smaller, indirect fired units are less subject to start/stop upsets, their costs would significantly increase if work hours were limited. A longer duration project would obviously also increase oversight, management, administration, monitoring and public coordination costs, and delay the redevelopment of the Site.

Cyclic operation of desorption units also impacts the effectiveness of air emission pollution control technologies. Such technologies are necessary at the Site to manage the increased risk presented by the possible creation of dioxins and furans, as well as emissions associated with other uncombusted *contaminants in soils such as metals. As previously discussed, when PCBs and PCB-containing particulates are maintained in 400-650 °F temperature range, dioxins and furans are formed; these conditions are more likely to occur during system start-up and shut-down, which, under EPA's operational approach, would take place daily. Also, EPA itself recognizes that operating the thermal desorption unit in a way that increases heat transfer to the contaminated soil (such as during direct-fired heating) "usually increases carryover of dust to the [air pollution control equipment] and creates problems. For example, offgas may burn holes in the baghouse filter media, and cause the induction fan to fail. The holes would allow particulate matter to pass through the bag walls and clog the carbon adsorption bed. The bed would then have to be regenerated more often during the clean-up process" (USEPA, 1997). By limiting operation of the TD unit to 8 to 10 hours per day, EPA increases the likelihood that such failures will occur, thereby creating new risks for the local community.*

Finally, it is important to note that TD units can generate significant quantities of dust. For example, at the Navy's Public Works Center in Guam, almost one third of the feed soil mass after thermal desorption was collected as "dust" in the cyclone and baghouse. To address this dust issue, some vendors have started using auger- or screw-type reactors, instead of rotary kilns. However, it is difficult to raise the temperature of the soil beyond about 350 °C, or 662 °F, in auger reactors, and vendors who use higher temperatures often use an auger reactor and a rotary kiln in series, thus expanding the size of the treatment system and the complexity of the operation.

Because desorption of the higher chlorinated PCB Aroclors found at the Site will require operating temperatures greater than 800 °F, auger-type, indirect fired LTTD will not be effective in removing much of the Site contaminants. Therefore, dust loaded with high concentrations of PCBs and dioxins is very likely to be a persistent problem if TD is used at the Hamilton Industrial Park Site. Although some vendors have tried to overcome this problem by recirculating the dust collected in the cyclone and baghouse back into the kiln, it is likely that the growing proportion of fines (i.e., small particles) in the system will reduce its efficiency. Such engineering issues hamper the effectiveness of on-site thermal treatment and highlight the critical importance of EPA's having failed to follow its own advice and conduct a pilot scale test of thermal desorption before selecting it as the preferred remedy for the Site.

EPA Response II.B.8.: Mechanical design features and process operating conditions vary considerably among the various types of LTTD systems. EPA believes that it is appropriate to determine the specific type and configuration of the system, based on site-specific conditions, during the remedial design. EPA is aware of the potential delays attributable to permit equivalents for on-site treatment, though this factor is only one potential delay among many stages of such a complex remedial action.

The PRP Group indicates that vendor availability may be limited. This has not been EPA's experience with LTTD. In contrast, EPA is aware that on-site treatment using an LTTD system typically requires 24 hours of operation to achieve maximum efficiency, and that use of daily time constraints, as discussed in the Short-term Effectiveness section of the Proposed Plan and Decision Summary of this document, would reduce the effectiveness of this technology. But since any of the active alternatives discussed in the Proposed Plan would have short term impacts on the community - because of noise, truck traffic, etc., constraints on operation would be necessary regardless of which alternative were being implemented. At other sites, such as Industrial Latex, EPA has been successful in performing LTTD with limited hours for some aspects of the remedial action. Though the Industrial Latex Site is smaller, the neighborhoods have some similar characteristics, such as the mix of residential and commercial use. The primary overnight complaints at the Industrial Latex Site were lights and backup alarms on construction vehicles.

EPA considers Industrial Latex Site a successful use of LTTD to treat PCB-contaminated soil.

EPA is well aware of the links between thermal treatment of PCBs, and potential generation of dioxins/furans, and took this into consideration in selecting a remedy.

As noted in the comment, technologies exist for managing particulates, though in some cases inefficiencies may be introduced. In EPA's experience, particulate control issues are manageable and methods to reduce the particulate load to the baghouse will be evaluated during the remedial design phase.

c) Regulatory impediments to thermal desorption
As previously noted, EPA fails to evaluate or identify a specific TD system in the OU2 Feasibility Study. Instead, the Proposed

Plan states that contaminants will be "destroyed in a combustion chamber", and the Feasibility Study states that potential off-gas treatment may include a combustion chamber or catalytic oxidizer. Many types of thermal desorption systems are recognized as RCRA-regulated incinerators, such as systems that vaporize and then burn organic contaminants or operate at high temperatures or are equipped with afterburners (USEPA, 1997). Such systems must comply with the RCRA subpart O incinerator emission requirements rather than the RCRA subpart X requirements for thermal desorbers, a process which will add substantial permit equivalency time and increased cost to the project. The RCRA subpart O incinerator requirements would apply to a system where PCBs are "destroyed in a combustion chamber." On a typical thermal desorption project, the requisite testing, data analysis, reporting and review by federal and state regulatory agencies can last as long as one year. Public pressure has caused some states to refuse to permit PCB incinerators of any type. In part, this issue has led to the development of the indirect-fired and condensation type systems. Some indirect-fired systems have already obtained national TSCA permits. However, as noted above, these indirect-fired systems have less than one-half the treatment throughput assumed by EPA in the Proposed Plan.

> **EPA Response II.B.9.:** As indicated in EPA Response II.B.5., EPA believes that it is appropriate to determine the specific type and configuration of the system, based on site-specific conditions, during the remedial design. Any system operated at OU2 of the Site, in the performance of the Selected Remedy, would be required to meet the applicable regulatory requirements. The observation about the inefficiencies of throughput of indirect-fired systems is not supported by EPA's contacts in the vendor community or by EPA experience.

II.C. EPA Has Not Adequately Explained To The Public The Human Health and Environmental Pollution Risks Associated with Thermal Desorption

Given the unique and site-specific risks that are often presented by the use of ex-situ thermal desorption at Superfund sites, governmental groups, including the EPA, FRTR, and the Agency for Toxic Substances and Disease Registry (ATSDR), have repeatedly cautioned regarding the risks posed in using this technology. ATSDR explicitly cautions that more information is needed prior to selecting thermal desorption near residential areas: "When EPA is conducting the feasibility study, if the site is surrounded by residential areas, modeling should be used to determine whether *thermal treatment is a preferable technology for cleanup at that particular site" (ATSDR, 2002). According to ATSDR, such air modeling data should be presented to the public in advance and should include 5 years of meteorological data, topography, and land use criteria so the public can understand potential public exposure.*

During the public meeting held by EPA to present the Proposed Plan, the community expressed its clear concern about potential airborne and other exposures relating to the Site remedial activities. However, EPA did not present any modeling data, nor did it describe the risks associated with thermal desorption that are not present in the other remedial technologies considered in the OU2 Feasibility Study. As described earlier, public disclosure of and discussion regarding the unique risks associated with thermal desorption should occur **prior** *to remedy selection so that there can be informed public discourse on this issue. At sites where such disclosure and discussion has not occurred, public opposition has understandably grown as more information regarding the thermal remedy has become available, and this, in turn, has led to costly delays and after-the-fact remedy modifications.*

EPA Response II.C.1.: EPA has determined that LTTD is an appropriate technology for OU2 at the Site. While air modeling might be appropriate, depending on the circumstances, in a feasibility study of incineration, it is not required when studying feasibility of a proven technology such as LTTD.

EPA notes that while several residents asked questions about the dust generated by operations at OU2, and in particular how EPA would contain any soil or dust that might become airborne during remedial activities, the comments on exposure centered on historic impacts upon area residents. The Short-Term Effectiveness section of the Proposed Plan and the Decision Summary of this document describe the risks that the remedial alternatives pose to workers, the community, and the environment during implementation of the remedial action, and address these concerns by explaining that mitigation measures will be utilized, such as engineering controls, personal protective equipment and safe work practices.

In contrast, the overwhelming focus of comments relating to the Preferred Remedy centered on the remedial action objectives and the extent of contamination. Many comments probed why EPA was cleaning up to a commercial standard, as opposed to a residential standard. EPA thinks that the Preferred Remedy, which calls for treatment of principal threat materials and off-site disposal where treatment would not be suitable, addresses the concerns of the community far more adequately that the PRP Group's preferred remedy. A copy of the public meeting transcript is attached in Attachment C of Appendix V.

The following summarizes the potential health and environmental risks presented by using thermal desorption at this Site.

1. Creation of dioxins and furans presents significant risk
Unlike any of the other remedial technologies considered by EPA in the OU2 Feasibility Study, thermal desorption presents an entirely new set of risks not only to the workers, but to the surrounding community, through creation of new toxins and other pollutant emissions associated with increased energy usage. For example, the ATSDR notes that thermal desorption units can emit polychlorinated dibenzo dioxins (dioxins or PCDDs) and polychlorinated dibenzo furans (furans or PCDFs) in the stack emissions of PCB and RCRA thermal desorption facilities and incinerators (ATSDR, 2002).

The risk of creation and release of these dioxins and furans is greatest when the gas temperature or downstream surfaces are in the range of 400-650 °F. The existence of chlorinated organics in soil also increases the risks for dioxins and furans to exist (ITRC, 1998). Both of these circumstances are certain to exist at this Site if TD is implemented. Chlorinated dioxins and furans are formed when PCBs and particulates are maintained in the 400 °F-650 °F temperature range, which typically occurs (a) when thermal treatment units treating soils have a bag house after the primary or desorption chamber or (b) when heat transfer surfaces (such as boilers or heat exchangers) are present, thus allowing the deposition of particulates on surfaces where cooling can occur. In addition, dioxins and furans already present in site soils will likely be concentrated in the dust emitted from the TD unit, further complicating the off-gas control issues.

While there is much debate in the scientific community regarding the toxicity and carcinogenicity of chlorinated dioxins and furans, the potential release of these compounds during treatment has caused significant concerns and delays at other CERCLA sites. Even where laboratory studies have shown successful desorption of various compounds, actual field applications have presented *significant engineering difficulties, leading to creation of additional risk. For example, at the Navy's Public Works Center in Guam, much of the PCB contamination was transferred during thermal treatment from the bulk soil to the fine particulates (dust) collected in the air pollution control train (NFESC, 1998). Treatment of a feed soil containing an average 1,360 ppm of PCBs resulted in dust contaminated with as much as 109,331 mg/kg of PCBs in the cyclone and baghouse, and almost one third of the feed soil mass was collected as "dust". Equally important, elevated concentrations of dioxins were discovered in the dust. Although trace amounts of dioxins already present in the soil could account for some of the recovered dioxin mass, uncertainty was created by the fact that 25% of the initial PCB mass was unaccounted for during the treatment. The disposal of this much dust would be a challenge, and, in some cases, might result in a waste stream with underlying hazardous constituents (e.g., dioxin) at levels prohibiting land disposal under RCRA.*

ATSDR states that "[a]n important key to preventing public exposure to hazardous emissions is to have a well-operated thermal treatment facility" (ATSDR, 2002). To accomplish this, the agency recommends maintaining stable operating conditions to minimize emissions. However, by cycling the thermal desorption unit in order to operate it only 8-10 hours per day, EPA cannot maintain the type of stable operating conditions necessary to meet ATSDR's objectives, and thus presents the nearby community with increased risk of short-term emissions exposure.

EPA Response II.C.2.: EPA is well aware of the links between dioxins, PCBs, and thermal treatment, and took this into consideration in its selection of a remedy. Disposal options for potential waste streams that would be generated as a result of the implementation of the Selected Remedy, such as dust containing PCBs and/or dioxin, will be evaluated during the remedial design phase. EPA is confident that it can identify appropriate off-site disposal facilities.

EPA is also aware that limiting operating hours to 8-10 hours a day will introduce inefficiencies into its operations. As noted in EPA's Response II.B.8, EPA has successfully performed LTTD at other sites with limited hours of operation. Selection of appropriate technology to control and minimize operations will be addressed in the design phase, as would be true for any of the active remedial alternatives evaluated in the FS. EPA weighed all these factors in its remedial decision making and concluded that the Selected Remedy presented the best balance of advantages and drawbacks.

2. Thermal technology creates additional worker and off-site hazards.

The FRTR has identified several significant, unique hazards associated with thermal desorption, particularly for on-site workers and nearby residents and businesses, including "elevated noise levels in the work area due to the operation of air blowers, pumps, and the ignition of fuels à that] may interfere with safe and effective communications." Other potential physical and chemical hazards unique to thermal desorption include possible fire or explosion, electrocution, thermal burns, infrared radiation hazards, and exposure to airborne toxins from incomplete combustion or energy use[5].

[5] See http://www.frtr.gov/matrix2/ health_safety/chapter_23.html.

ATSDR articulates similar concerns for both worker and off-site exposure. Specifically, if the technology does not effectively decontaminate the solid waste on the first pass through the unit, worker exposure to contaminants could be increased. This would especially apply if workers handle the partially treated waste as if it were clean prior to receiving the waste analysis. Additionally, the reprocessing and additional handling of partially treated solid wastes can also increase off-site exposure due to the greater potential for fugitive emissions (ATSDR, 2002). As discussed above, operating an exsitu thermal desorption system on a cyclic basis for 8-10 hours per day where the temperature and soil constituents have not been appropriately characterized will present an almost certain need for re-treatment and thus trigger the risks flagged by ATSDR.

VOC-handling also presents significant concerns with LTTD. ATSDR warns that VOCs may be emitted as fugitive emissions and cause acute health problems for people off-site, and that explosions can occur when VOCs are treated (ATSDR, 2002).

EPA Response II.C.3.: Please refer to EPA's Responses II.B.8 and II.C.1, regarding air emissions, noise, and odor problems. As with any active remedial alternative, the Selected Remedy poses a risk of short-term impacts on workers and the surrounding community. EPA has analyzed these risks in the Proposed Plan, and in the Comparative Analysis section of this decision document, has discussed the need to use engineering controls, personal protective equipment and safe work practices in implementing any of the active remedial alternatives. Accordingly, the LTTD system will be equipped with proven engineering controls that have been shown to be capable of addressing potential odor and dust problems, and noise concerns. Proven measures will be implemented during the performance of the remedial action to control and monitor air emissions, and trucking routes that present the least disruption to the surrounding community will be utilized.

3. Significant noise and odor problems are presented by thermal desorption.

EPA guidance recognizes that ex-situ thermal desorption "has the potential for generation of nuisance odors and dust, as well as other more serious emissions resulting from on-site excavation." (USEPA, 1997). This problem is exacerbated at this Site due to the need for total excavation, screening and handling of more than 100,000 cubic yards of significantly contaminated media. This cautionary guidance is supported by experiences such as that at the Universal Oil Products Superfund Site in New Jersey (EPA/ESD/R02- 99/122 1999) where a Record of Decision was signed in 1993 for thermal treatment of PCB contaminated soil. In 1997, the thermal treatment operation had to be dismantled because cleanup goals could not be met efficiently due to operational problems and because workers from an adjacent site complained about odors from the thermal operation.

In addition, most thermal desorption systems produce high decibel noise levels, resulting in excessive noise in the surrounding community. According to the 2001 Technology Safety Data Sheet: Thermal Desorption prepared by the National Environmental Education and Training Center, Inc., "[i]nstallation of gas treatment and dryer equipment presents the following hazards: Noise exposure can occur during the setup and preparation of the dryer kiln and for work necessary to connect equipment for system operation" (NEETC, 2001). Additionally, "[e]xcavation of contaminated soils and prescreening activities prior to introduction into thermal desorption system presents the following hazards: Noise levels could approach and exceed acceptable limits to workers especially around soil screen machine and heavy moving equipment." For example, at the McClellan AFB, Sacramento, California, thermal desorption-related activities exhibited or generated elevated noise levels, with the highest recorded peak reading at 70 dBA. By way of comparison, the South Plainfield's Noise Ordinance6 provides that no person shall cause, suffer, allow or permit sound from any industrial, commercial operation or residential property which *when measured at any residential property line is in excess of any of continuous airborne sound which has a level in excess of sixty-five (65) dBA from 7:00 a.m. to 10:00 p.m and continuous airborne sound which has a sound level in excess of fifty (50) dBA from 10:00 p.m. to 7:00 a.m.*

[6] See http://www.nonoise.org/lawlib/cities/nj/s_plainfield.htm

EPA Response II.C.4.: Please refer to EPA's Responses II.B.8 and II.C.1, regarding air emissions, noise, and odor problems.

The problems that the commentors identify would arise to a certain extent during the implementation of any active remedial alternative, including the PRP Group's preferred remedy. EPA is aware of NJDEP's experience at the Universal Oil Products Site, and expects that the lessons of that site will be applied during remedial design for the OU2 remedy for soils so as to avoid the disruptions caused by odor problems. Moreover, EPA weighed all these factors in its remedial decision making and concluded that the Selected Remedy presented the best balance of advantages and drawbacks.

4. Additional pollution from increased energy consumption. *EPA stated the following in its responses to comments on the Proposed National Contingency Plan (FR 8720):*

One commenter stressed that the impact of the remedial action on natural resources must be assessed under this criterion ...EPA agrees that the impact of the remedial action must be assessed and calls for this analysis under the short-term effectiveness criterion.

Implementing LTTD will require the use of significant amounts of fossil fuels. For example, the FRTR "Cost and Performance Report - Thermal Desorption at the Industrial Latex Superfund Site, Wallington, New Jersey" reports a 40 million BTU per hour indirect heating rate during treatment of PCBs and VOCs in soils. Scaling to the 80,250 tons to be treated at this Site at a 20 ton per hour production rate and allowing two hours per day for pre-heating would lead to approximately 5,000 hours of heating (see Appendix B). Converting from BTUs to natural gas leads to an estimate of 197 million cubic feet of natural gas to be burned to generate the heat needed for thermal desorption. Combusting this quantity of natural gas will cause a localized release of greenhouse gases, particulates and other airborne pollutants to *which the local residents would not otherwise be exposed.*

EPA Response II.C.5.: The Short-term Effectiveness section of the Proposed Plan and the Decision Summary of this document state that LTTD would result in relatively higher air emissions than the other alternatives. These emissions will be minimized through the implementation of engineering controls. Greenhouse gas emissions are generally not considered to contribute to local health effects. The types of emissions attributable to an LTTD unit, such as the unit operated at the Industrial Latex site, are managed through a permit equivalency (in that case, with NJDEP) that takes into account local air quality considerations and time of operation, among other factors, in determining acceptable discharge parameters.

5. Other Risks

The Proposed Plan assumes that the Preferred Alternative will require off-site transportation of 53,500 cubic yards of contaminated soil not treated with TD. At 1.5 tons per cubic yard, and 20 tons per truck-load, this would equate to more than 8,000 trips through the local community by large dump trucks. The need to transport clean backfill to the Site would add more than another 10,000 dump truck trips through the community. Given this level of transportation activity, the potential risks to the community associated with increased truck traffic must be afforded far greater consideration in the remedy selection. This is especially true in light of the surrounding neighborhood's sensitivity to traffic concerns, which was expressed during the Borough of South Plainfield's public meetings held to discuss Site redevelopment. Moreover, the potential for truck accidents and ensuing releases of contaminated materials is not merely theoretical as was evidenced by an accident involving a truck loaded with soil from the Tier II Removal Action while in route to the disposal facility. The consequences of such an accident and ensuing release become even more serious should tanker trucks containing concentrated PCB liquid residuals from the thermal desorption process be involved.

Notwithstanding the health and environmental risks uniquely associated with thermal desorption, EPA asserts that thermal desorption provides for greater long-term risk reduction in comparison with the other technologies evaluated. This assertion is directly contradicted by EPA's remedy selection for other PCB sites where EPA has rejected thermal desorption in favor of other approaches. These sites include the Scientific Chemical

Processing site in Carlstadt, New Jersey where EPA Region II concluded that the solidification-based remedy would be effective in the long-term, as it would reduce potential risks due to ingestion and dermal contact pathways and minimize any potential for contamination impacting groundwater. Similarly, at the York Oil, Co. Superfund Site in Moira NY, EPA Region II determined that: "Over the long-term, the on-site treatment options [including solidification and thermal treatment, among others] provide essentially equivalent protection to the local community". It is noteworthy that solidification/stabilization and on-site disposal under an alternative cap of 35,700 tons of soils and sediments impacted by PCBs, VOCs, oil and metals were successfully implemented at the York Oil Site, rather than the contingent remedial alternative of LTTD.

EPA Response II.C.6.: All of the remedial alternatives would give rise to concerns with transportation of waste material off-site that would need to be resolved in remedial design. EPA does not agree with the PRP Group's method for determining the number of truck trips required, but using their method, which assumes that every truck trip is actually <u>two</u> trips, arriving and departing, even the PRP's Group's preferred remedy would require over 2,700 truck trips to handle the capacitor disposal area and the over-size debris. To address the potential impact on the adjacent residential community, during remedial design transportation routes and methods, including the use of rail, will be evaluated, and measures will be implemented to minimize any such impact.

As stated in EPA's Response II.B.3, EPA has successfully implemented LTTD technology at Superfund sites across the nation. Thus, while there are sites where LTTD evidently was not the selected remedy, based on the conditions at those sites, there are others where it was found to be protective and effective over the long term. Similarly, EPA's selection of LTTD for OU2 was based on site-specific conditions, fully explained in the Proposed Plan and the Decision Summary of this document.

II.D. EPA's Proposed Plan Very Seriously Underestimates Both the Cost and Remediation Time Frame Associated with Using LTTD

1. EPA's unit costs for LTTD are severely underestimated. *Information provided with the OU2 Feasibility Study indicates that the EPA assumed that the LTTD component of the remedy would cost approximately $101 per ton (or approximately $151 per ton if* *a 50% mark-up for indirect costs and contingency is included - "fully loaded rate"). Information available from the FRTR and EPA clearly indicates the experience in using TD for PCBs at CERCLA sites yields actual treatment costs that are much higher than the estimated costs presented in the OU2 Feasibility Study and Proposed Plan.*

For example, TD was utilized most recently at the Industrial Latex Site in Wallington, NJ where 53,685 cubic yards were treated for $15,700,000, or $292 per cubic yard (assuming 1.5 tons per yard, this equates to $195 per ton as a fully loaded rate). Similarly, TD treatment costs for the Outboard Marine Corporation Superfund Site were $3,370,000 for 12,755 tons, or $265 per ton. It is noteworthy that vendor estimates for the Outboard Marine Site project ranged from $700,000 to $1,500,000 (which means that actual costs were more than double the estimated remedial costs).

At one of the more independently documented field projects, Navy's PWC Guam, the cost of thermally treating 7,700 tons of PCB-contaminated soil was estimated at $360/ton (NFESC, 1998). Finally, at the Wide Beach Superfund Site, the fully loaded cost for TD of soils containing up to 5,000 ppm PCBs was completed at a cost of $379 per ton. Costs for TD treatment of PCB contaminated soils obtained from EPA's Remediation Technology Cost Compendium - Year 2000 range from $162 to $548 per ton treated, including capital and operation and maintenance costs (USEPA, 2001).

Further understating EPA's estimate of LTTD costs was its decision to use a per ton estimate that did not include system set-up/trial burn, or system optimization. Nor did EPA attempt to incorporate its experience that TD costs associated with processing PCBs are significantly higher than costs of processing other contaminants. In fact, EPA reports, but does not take into account in its TD cost estimates for the Site, that sites where PCBs were present in the contaminated soil generally exhibited higher unit costs than projects where PCBs were not present. Further review indicates that, the types of emissions controls used for projects where PCBs are present differ substantially from those used for projects where PCBs are not present. The need for more protective emission controls is, of course, not surprising given the risk factors already discussed. For example, most of the projects where PCB contaminated soil was treated required the use of complex emissions control systems. Therefore, it was determined that projects involving PCB contaminated soil *did not involve technologies having characteristics similar to those projects that did not involve PCBs, and that the costs for these two types of projects should be analyzed separately.*

A further substantial impact on cost is the proposed operating approach of 8 to 10 hours per day of treatment. This approach is inherently inefficient for a process such as LTTD that works best as a continuous process. Such inefficiencies significantly increase contractor costs, and these increases are not reflected in EPA's unit costs.

EPA Response II.D.1: As indicated in the comment, costs for operating LTTD systems vary based on site-specific conditions. The cost estimates for operation of LTTD at OU2 of the CDE Site are based on the anticipated operational parameters of the LTTD system. Contrary to the commentors' statement, those include the need to address the presence of PCBs in the contaminated soils, and the inefficiencies inherent in limited hours of operation. The unit costs developed for use in the OU2 FS for LTTD are in line with the Industrial Latex Site and current vendor information.

The cost estimates in the OU2 FS do not contain specific line items for emission control systems, the off-site management of the condensed PCB liquids and other items that are specific to the selected LTTD system. Because of the variability of costs, based on the design and operation, the cost estimates of operating the LTTD system are consolidated into a single rate for a broad range of operational items. EPA notes that the PRP Group's cost estimate for its Section III preferred remedy makes the similar unit cost assumptions.

2. The OU2 Feasibility Study and the Proposed Plan do not account for several other critical cost drivers.
Other costs would be incurred during a TD remedy that must be considered to properly evaluate the likely cost of this alternative. These include:

a) Costs associated with off-site incineration of condensed PCBs and/or spent carbon from air pollution control equipment are not accounted for in the OU2 Feasibility Study or the Proposed Plan. Approximately 50,000 gallons of PCB oil were condensed during the Outboard Marine Superfund Site project. Implementation of thermal treatment with a condensation-based air pollution control technology could produce from up to 125,000 gallons of PCB oil (assuming 80,250 tons of soil are treated at an average *contaminant load of 10,000 ppm PCBs), or up to 28 tanker trucks (4,500 gallon capacity each), that would have to be transported for off-site incineration. Similarly, thousands of pounds of activated carbon used for vapor-phase polishing would also have to be transported and incinerated off-site.*

b) Air monitoring, reporting and public coordination costs are not explicitly identified in the OU2 Feasibility Study or the Proposed Plan. While LTTD has previously been conducted near residential areas, prior experience at other Region II sites (such as the Fulton Terminals Site in Fulton, NY, where LTTD was conducted on a small site within the town) suggests that extensive monitoring and public communication is needed during remedy implementation. Failure to adequately address public concerns can lead to significant project delays and adversely affect project costs.

c) As previously noted, most thermal treatment vendors' cost proposals assume efficient operation of their equipment in order to minimize time on site. EPA's assumed operations of only 8 to 10 hours per day will result in significant cost increases.

In addition, a review of NPL site remedial action case studies indicated that implementation of TD at other PCB sites has demonstrated that this technology is not always cost-effective, and it has had to be replaced by more effective alternatives.

> **EPA Response II.D.2.:** As stated in the Proposed Plan, cost estimates are expected to be accurate within a range of +50 to -30 percent. Until the configuration of an LTTD system is developed in the remedial design phase, the costs identified in the Proposed Plan and ROD are estimates based upon the information available during the development of the FS. This is true for all the alternatives evaluated in the FS. The cost estimates in the FS do not contain specific line items for emission control systems, the off-site management of the condensed PCB liquids and other items that are specific to the selected LTTD system. Because of the variability of costs, based on the design and operation, the cost estimates of operating the LTTD system are consolidated into a single rate for a broad range of operational items.

3. More realistic calculation of costs.
As indicated above, the Proposed Plan's estimated unit costs for LTTD of $101 per ton is significantly less than the documented experience at other PCB sites. Cost data from other projects indicate that thermal treatment of PCB soils could cost up to

$500 per ton, an approximate 400% increase over the $101 per ton used in EPA's cost estimate. In addition, it is quite likely that the time to complete the thermal treatment will be much longer than the 2-3 year time line projected in the Proposed Plan. Even if a treatment system could operate at EPA's assumed throughput, just the thermal treatment of the soils would take 3 years. However, as discussed above, the TD that could be conceivably be operated under the Proposed Plan's constraints have only one-half the throughput assumed by EPA. Moreover, EPA's project time line does not include the design, construction, testing and permitting steps in the process. Realistically accounting for (1) the likely duration of these essential process steps, and (2) the throughput limitations discussed above results in a project schedule that could easily exceed ten years. The longer duration of design, testing and implementation, of course, increases the transactional costs, including oversight, which are also not accounted for by EPA. In 1997, EPA predicted that costs for thermal processing would run up to $380 per ton for PCB - contaminated soil (USEPA, 1997a). Adjusting the cost estimate for the Preferred Alternative using EPA's $379 per ton cost (a unit cost also demonstrated at the Wide Beach Site by actual experience) and a time frame of 3 years of operation, the Total Present Worth Project Cost for this remedy is $86.8 million, almost $25 million more than $62 million estimate for EPA's Preferred Alternative[7] (see cost estimate details provided in Appendix A). Costs would increase even further if other appropriate Site specific contingencies were incorporated in the cost estimates.

Since the Site-specific data reveals that TD will inevitably have a higher unit cost then that estimated in the Proposed Plan and may well require additional management of treatment residuals, we estimate that the Total Present Worth Project Cost using TD would almost certainly end up costing ***at least $87 million.***

[PRP Group footnote]
[7] *It should be noted that the present worth costs are based on a discount factor of 1% consistent with the cost estimates presented in EPA's Feasibility Study. Using the discount rate specified in February 2004 by the OMB for federal projects longer than 30 years of 3.5% would result in lower estimated present worth costs.*

EPA Response II.D.3.: Please refer to EPA Response II.D.1. and II.D.2 for a discussion of EPA's cost estimating with respect to the Selected Remedy and other active alternatives.

The discount rate of 1 percent was applied for each of the alternatives evaluated. Therefore, any change in present worth costs would apply for each of the alternatives. In addition, as stated in the comment, the discount factor is not applied to short-term projects. Therefore, a discount rate is only applied to the operation and maintenance costs and not the excavation and LTTD operations.

4. Schedule problems posed by operating the thermal desorption unit for only 8 - 10 hours per day.

As shown on OU2 Feasibility Study table B-5, EPA assumes that active LTTD operations would be limited to only 8 to 10 hours a day, with a throughput of 20 tons per hour. Assuming 8 hours per day of treatment, and 2 hours per day of pre-heating and shut down, this approach equates to 2.8 years of treatment time - assuming no significant downtime or re-treatment volumes. As discussed above, no such treatment system appears to exist which could satisfy these operating parameters (both with respect to throughput and operational approach). For example, full-scale TD treatment of 12,700 tons of soils and sediment at the Outboard Marine Site was completed at an average of 8.31 tons per hour. This productivity would equate to 6.7 years for the TD treatment portion of the work at the Hamilton Industrial Park, assuming, as EPA does in the OU2 Feasibility Study, that treatment is conducted 10 hours/day, 5 days/week, 36 weeks/year. While EPA does not identify which commercially available thermal desorption process was used in evaluating alternatives for the OU2 Feasibility Study, it is clear that the specific process used will dramatically affect the duration of the remedy and the resultant impacts on the local community.

EPA Response II.D.4.: Throughput and residence times of LTTD systems vary depending on site-specific conditions. In evaluating the remedial alternatives, EPA took into consideration the concerns of the community regarding the estimated construction time frames and daily operational periods. EPA has not limited the operational period of an LTTD to 8 to 10 hours per day.

In the Proposed Plan, EPA estimated that the selected soil remedy could be performed in 2 to 3 years. As indicated in the Short-term Effectiveness section of the Proposed Plan, the time frames discussed therein included the time to construct each alternative, but not the time required for remedial design, administrative activities, or enforcement-derived delays. Therefore, the time frame identified in the Proposed Plan is consistent with the PRP's calculation of 2.8 years identified in the comment.

Time considerations unrelated to the specific remedial technologies evaluated in the FS and Proposed Plan vary from alternative to alternative, but tend to have more commonalities than differences. Even the remedial alternatives with the shortest implementation time frames are expected to require several years of preparation time prior to implementation, and as with the Selected Remedy, those times were not included in the estimated construction time frame. EPA expects that any of the remedial alternatives could be implemented in a phased manner that would allow for the initiation of the Borough's redevelopment plan concurrent with implementation, including the Selected Remedy.

III. Alternative Remedial Approaches for OU2

III.A. Alternative Remedy Overview

Because of the significant concerns identified with EPA's Proposed Plan for on-Site soils, particularly the recommended use of thermal desorption, it is important to consider whether there are any alternative remedial actions that would better satisfy EPA's remedy selection criteria. A careful review indicates that there are alternative remedial actions for OU2 that do not present the kinds of technical problems associated with thermal desorption at the Site, but will still be protective of human health and the environment; will comply with ARARs; will comport with EPA's guidance on properly addressing principal threat material; will be superior in terms of effectiveness, implementability and cost and can be more readily integrated in a timely manner with the planned redevelopment of the Site.

In addition to the remedial alternative discussed in the HIPG's July 16, 2003 letter to the National Remedy Review Board ("NRRB"; see discussion presented in Section IV), there is another promising alternative remedial action which EPA found to be protective of health and the environment in its OU2 Feasibility Study. That alternate remedy includes the following elements:

- *Targeted excavation and off-site disposal of principal threat material within the capacitor disposal area, which constitutes the primary source of principal threat material (both in terms of PCBs and VOCs).*

- *Separation of debris from those soils in other areas of the Site having contaminant concentrations constituting principal threats. Soils generated from the debris separation process will be placed back in the treatment area, and the separated debris will be segregated and disposed of off-site.*

- *Treatment by means of in-situ solidification/stabilization (S/S) of soils having contaminant concentrations constituting principal threats. In areas where principal threat levels are limited to the shallow soils or cannot otherwise be treated in-situ (e.g., floodplain soils), these surface soils will be consolidated on-site into the larger area(s) which are subject to treatment. In addition, soils in designated clean utility corridors for purposes of Site redevelopment will be removed and consolidated prior to treatment.*

- *Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.*

This remedial alternative offers the following distinct benefits:

- *Targeted excavation of the capacitor disposal area addresses the primary principal threat material thereby removing a potential source of ground water contamination.*

- *Solidification/stabilization following excavation of the capacitor disposal area will address the primary risk pathways of concern.*

- *On-site containment of the remaining soils will avoid the potential risks and cost increases resulting from more intrusive excavation and treatment alternatives.*

EPA Response III.A.1.: The proposed alternative presented by the PRP Group as its preferred remedy is similar in description to Alternative S-4, which was evaluated in the FS and presented in the Proposed Plan and Record of Decision. The Summary of the Preferred Alternative Section describes the justification for not selecting Alternative S-4 as the final remedy.

The primary difference between the PRP Group's preferred remedy and Alternative S-4 is the elimination of Soil Vapor Extraction (SVE) to address VOCs, which was a substantial element of Alternative S-4. The PRP Group has also concluded (incorrectly, in EPA's judgement) that by addressing the capacitor disposal area it will have addressed most of the principal threats. Most of the uncertainties identified by EPA with regard to Alternative S-4, which led EPA to conclude that it did not present the best balance of advantages and disadvantages, apply with equal force to the PRP Group's preferred remedy.

The PRP Group's proposal suggests circumstances in which reconsolidation of residual contamination on the Site might occur. EPA has not made any determinations in discussion of the Selected Remedy regarding whether or not reconsolidation may be appropriate. This will be assessed in remedial design and evaluated for consistency with the redevelopment plans for OU2.

With regard to "redevelopment capping", EPA has indicated throughout the remedial planning process that a well engineered redevelopment plan incorporating appropriate design elements into the base plan and could be sufficiently protective to be used in place of a multi-layer cap. However, a soil vegetative cover alone may not be adequate protection for much of OU2.

III.B. Solidification/Stabilization Overview

As documented in EPA's September 2000 publication entitled Solidification/Stabilization Use at Superfund Sites (USEPA, 2000), S/S is a widely accepted and applied treatment for a broad range of hazardous wastes. S/S is one of the top five source control treatment technologies used at Superfund remedial sites, having been used at more than 160 sites since 1982. These projects have utilized S/S to treat soils containing diverse contaminant mixtures, including VOCs, SVOCs, metals, PCBs, pesticides and/or radionuclides.

In applying S/S to sites with inorganic and organic contaminants, it is recognized that various mechanisms can be tailored to immobilize hazardous constituents. "Solidification" refers to changes in the physical properties of a waste, which usually include an increase of compressive strength, a decrease of permeability, and the encapsulation of hazardous constituents. "Stabilization" (also referred to as fixation) typically utilizes a chemical reaction to convert the hazardous constituents in a *waste to a less mobile form. Different types of additives can be used to address contaminants such as PCBs, VOCs, and metals. For example, cement-based S/S reagents have been successfully modified by adding adsorptive materials (e.g., granular activated carbon) to the reagent mix to immobilize organics. Using adsorptive materials can also enhance the hydration of the pozzolan reagents by removing organics that can retard the hydration process.*

> **EPA Response III.B.:** A similar discussion appears in the FS. In that this technology was selected as part of a remedial alternative, EPA considers it effective at addressing principal threats at OU2. As a result of the remedial screening process, and with input from the NRRB and comments from the PRP Group, EPA Region 2 concluded that a combination of SVE treatment (to address VOCs) with solidification (to address PCBs at concentrations greater than 500 ppm) provided a more balanced and effective alternative than either treatment alone, leading to the development of Alternative S-4, which is described and evaluated in the FS, and analyzed in the Proposed Plan and Record of Decision. Nevertheless, EPA's analysis of all the remedial alternatives showed that Alternative S-4 had the highest uncertainties with regard to performance, long-term effectiveness, and implementability, leading EPA to conclude that selection of Alternative S-4 was most likely to give rise to implementation problems that could delay redevelopment.

III.C. Design Considerations to Address Primary Uncertainties

In its comments to the NRRB, the HIPG noted that there were significant potential issues with an S/S-based remedy which needed to be addressed before such a remedy could be selected. The point of the PRP Group's comments to the NRRB was to recognize those issues/concerns that may impact the effectiveness and cost of in-situ S/S, which were not considered by EPA in its initial evaluation and cost analysis of this alternative. Since the concerns raised by the HIPG's comments to the NRRB and the evaluation of solutions to address them were not fully discussed in either the OU2 Feasibility Study or in the Proposed Plan, the HIPG has undertaken a detailed evaluation of the S/S technology and has determined that the technical and cost uncertainties associated with S/S are in fact significantly less than those associated in the Preferred Alternative. Based on this detailed evaluation of the S/S technology as it applies to the Site, the HIPG's recommended remedial approach incorporates the *following Site-specific considerations to address the concerns expressed by the HIPG in its comments to the NRRB:*

> **EPA Response III.C.1.:** In 2003, the PRP Group submitted written comments to the NRRB that were highly critical of the potential use of solidification/stabilization as a remedy for OU2. These comments are included as part of the Administrative Record for OU2. As discussed above, EPA Region 2 did consider the PRP Group's comments and the NRRB recommendations, which are also included in the Administrative Record, in developing its remedial alternatives.

Concern: Observations and data reported from the OU2 remedial investigation (RI)regarding the physical heterogeneity of the on-site soils. As described in the RI Report, overburden materials at the Site are described as including man-made fill (gravel, cinders, ash, slag), debris (brick, glass fragments, wood, metal fragments, capacitors), and floodplain soils. The geophysical survey conducted during the RI indicates that the debris is widely scattered and shallow (i.e., less than 3 to 5 feet).

Site-Specific Solution: To address these heterogeneities, the HIPG's recommended alternative includes removal of the largest portion of the debris (i.e., the capacitor disposal area), for off-site disposal, and the separation of the remaining debris from the shallow soils prior to the implementation of in-situ S/S.

Concern: The potential limitations of a single remedial technology to address chemical heterogeneities in waste streams. As indicated in EPA's Feasibility Study and Proposed Plan, it has been impractical to identify a single cost-effective excavation and/or treatment process to address metals, VOCs, SVOCs, and PCBs, present in soils to be remediated at the Site.

Site-Specific Solution: As discussed above, the HIPG's recommended alternative includes a combination of technologies, including excavation/off-site disposal, debris separation, and in-situ S/S. This recommended alternative incorporates the use of pozzolan-based S/S reagent combined with an adsorptive additive such as carbon to achieve the necessary reduction in contaminant mobility for both organics and inorganics. A bench-scale treatability study will be conducted to develop the optimal mix design to reduce the leachability of all of the contaminants *present, to reduce the soil permeability, and to ensure soil strength suitable for the planned Site redevelopment.*

<u>*Concern: On-site treated soils management may interfere with redevelopment plans.*</u> *The increased volume of soils treated by means of S/S or the physical properties of soils treated by means of thermal desorption may result in additional remediation costs associated with off-site disposal of the treated soils or reworking of soils to allow for reuse as backfill prior to redevelopment.*

<u>*Site-Specific Solution:*</u> *As indicated above, the S/S mix design studies will include an assessment of the ultimate strength of the treated soil matrix after curing. The goal of the studies will be to design a reagent mix that yields a treated soil that has geotechnical properties conducive to supporting the planned redevelopment loads. In addition, the recommended alternative includes the compaction of the treated soil in-place, if necessary, prior to curing to increase the in-place strength of this material.*

The recommended alternative will also address the increased volume of treated soil. For example, the increased volume of soil will be beneficially used in the redevelopment to fill in the capacitor disposal area excavation, and to achieve the grades required for the intended Site redevelopment and reuse (e.g., to raise grades under the building footprints to allow for loading docks). This advantage of S/S was highlighted in a recent article entitled Applying Solidification/Stabilization Treatment to Brownfields Projects where it was noted that[8]:

[PRP Group footnote]
[8] *See http://www.cement.org/pdf_files/RP418.pdf.*

Long used in treating radioactive and hazardous wastes, solidification/stabilization (S/S) is also an increasingly popular treatment in the remediation of contaminated land, particularly brownfield redevelopment, since the treated wastes can often be left on site to improve the property for subsequent construction. ... Reuse of treated material [has] saved developers significant costs, while providing for site redevelopment that is protective of human health and the environment.

Overall, it is expected that with proper design, soil treated by means of S/S can be readily used in the redevelopment, in *comparison to soils that have been thermally treated at 800 °F or higher. Such thermally treated soils will likely need to be amended to be suitable for future construction and Site redevelopment.*

EPA Response III.C.2.: The PRP Group's critical comments with respect to solidification/stabilization (directed to the NRRB in July 2003), and the solutions to its earlier critique, identified above, have been discussed, in one form or another, in EPA's remedial planning process. EPA notes that the heterogeneity concerns pose implementation challenges to all the active remedial alternatives, in this order of affect, from least to most: S-3, S-2, S-5, S-3/S-5, S-4. The PRP Group's discussion of the implementation challenges associated with solidification, and the increased volume of material due to the addition of reagents and post-remediation geotechnical properties that may interfere with redevelopment, is cursory, and its suggested solution to the soils management issues is in EPA's view inadequate.

As described by the PRP Group, the primary task of solidification is to immobilize the principal threat waste PCBs in an adequately stable matrix, and the other soils management issues may not be addressed after this primary task is accomplished. EPA determined that implementation of Alternative S-4, EPA's version of the PRP Group's preferred remedy, would require treatability studies during the remedial design to determine how to address the soils management issues identified by the PRP Group, among others. Without such studies, the effectiveness of the solutions to proposed by the PRP Group cannot be determined. Even after treatability studies, the uncertainties related to Alternative S-4 (with or without SVE to address VOC contamination) are, in EPA's view, higher than for any of the other technologies considered.

III.D. Effectiveness, Implementability and Cost

The recommended alternative will reduce any unacceptable risks to public health and the environment at the Site within a reasonable time frame, will cost significantly less than other alternatives, and will provide for long-term reliability of the remedy.

S/S will prevent the mobility of Site contaminants by reducing the availability of these contaminants within a micro- and/or macro-encapsulated matrix. Treatment by solidification will (a) bind PCBs, along with other contaminants, into cementitious *hydration products, (b) create a soil with more physical integrity such as a granular solid or monolith, and (c) reduce the hydraulic conductivity of the soil. In addition, the use of adsorptive components in the S/S reagent mix will continue to reduce the leachability of these constituents even if the encapsulated soil structure degrades over time.*

Overall protectiveness of human health and the environment. *The recommended alternative will protect human health and the environment by virtue of elimination of the potential for direct exposure to Site contaminants and the potential for migration of contaminants to ground water through a combination of the treatment of principal threat material, redevelopment capping and institutional controls. The removal of the capacitor disposal area addresses the primary principal threat material acting as a potential direct contact risk and as a source of ground water contamination. The treatment of the remaining principal threat contaminated soils by means of S/S will eliminate the risks of potential dermal and inhalation exposure through encapsulation of the contaminants. In addition, S/S will eliminate the potential for the contaminated soil to act as a source of contamination to the underlying groundwater by sorbing contaminants onto granular carbon and encapsulating them within a low permeability cement matrix. Finally, the capping of the Site as part of the redevelopment project will further minimize potential contact with contaminated soil (both treated principal threat soils and other lower risk soils), protect the treated soil from damage by Site activities, and reduce infiltration. In short, the recommended alternative addresses the objectives for reduction in toxicity, mobility and volume, as follows:*

- Removal of the most significant principal threat source material (i.e., the capacitor disposal area) and treatment of the remaining principal threat soils will result in an overall reduction in risk associated with OU2 soils.

- The volume of principal threat material will be permanently reduced through excavation and off-site disposal of the capacitor disposal area.

- The mobility of contaminants in soil will be reduced through S/S of the remaining principal threat soils and capping of both treated soils and lower risk soils.

Implementability. *The recommended alternative relies on widely applied technology, utilizing readily available equipment* *and materials. S/S is a well known, widely applied (i.e. used at over 160 Superfund sites to date) and readily available technology. This treatment technology has been successfully implemented using in-situu, ex-situ or a combination thereof at the following Superfund sites with which the HIPG's project team has had direct experience. It is to be noted that these sites were contaminated primarily with PCBs and VOCs, although some also were impacted by oils and/or metals.*

- *PSC Resources Superfund Site in Palmer, Massachusetts.*
- *York Oil Superfund Site (OU1and OU2) in Moira, New York.*
- *Caldwell Trucking Superfund Site in Fairfield, New Jersey.*
- *Chemical Control Superfund Site in Elizabeth, New Jersey.*
- *Peak Oil/Bay Drum Superfund Site in Tampa, Florida.*
- *Liquid Disposal, Inc. Superfund Site in Utica, Michigan.*

S/S is also the preferred alternative at the Scientific Chemical Processing Superfund Site in Carlstadt, New Jersey, which involves a similar application to that being proposed for this Site. In fact, S/S has been selected as a replacement technology at a number of sites where thermal desorption was initially selected, but later proved to be either ineffective and/or too costly. Finally, the ability to complete the recommended S/S alternative is not likely to be constrained by community concerns relating to noise associated with continuous operations, potential odor problems and avoidable increases in truck traffic on local roads.

Long-term Effectiveness. *The removal of principal threat material from the capacitor disposal area, treatment of the remaining principal threat soils by S/S, and redevelopment capping represents a long-term solution for this Site. The proposed S/S treatment technology has proven effective at other sites having PCB and VOC contamination, where concentrations of VOCs were reduced by up to 90% and the mobility of PCBs and VOCs was eliminated as evidenced by TCLP analysis of post-S/S samples. Performance testing of the S/S treatment is typically simple, with criteria based on the reduction in leachability of the contaminants of concern and the compressive strength of treated soils.*

These specific performance criteria will be developed as part of the Remedial Design phase of work. Finally, the beneficial redevelopment and reuse of the Site helps to ensure continued maintenance and monitoring of the cap's integrity.

In addition to the ability of a S/S reagent to stabilize and encapsulate soil contaminants, S/S has the additional benefit of addressing the perched water that was encountered in the treatment area during EPA's OU2 Remedial Investigation. Concern over how the perched water was to be addressed was voiced on several occasions by members of the public during EPA's public consultation meetings. While the presence of perched water would lead to additional soil handling difficulties during thermal treatment, S/S using Portland cement is frequently used to solidify RCRA liquid waste or solid-form waste with a free liquid portion so that the waste can be land disposed. This is the case because cement reacts with water, chemically binding it in cement hydration products. Thus, while perched water is not directly addressed by EPA's Preferred Alternative, it will be both addressed and effectively treated by the proposed S/S remedy.

Short-term Effectiveness. *The recommended alternative, which relies heavily on in-situ treatment technology, avoids the need for unnecessary, extensive excavation. In addition, the alternative reduces short-term worker and community risks associated with excavation and off-site transport remedies[9], and the extensive handling of soils associated with ex-situ treatment. Due to the fact that only small areas will be treated at a time and that bulk excavation will not occur, the potential for VOC releases during in-situ mixing is far less than that associated with the other more intrusive remedies being considered by EPA in the Feasibility Study. The potential for unacceptable emissions during handling of surficial soils as part of the debris separation process is not expected to be significant (e.g., the estimated mean VOC concentration in soils remaining after the capacitor disposal area is removed is below the New Jersey residential direct contact soil cleanup criterion for TCE). However, the potential for unacceptable vapor and particulate emissions will be assessed as part of the Remedial Design, and appropriate control measures will be specified as necessary.*

[PRP Group footnote]
[9] *EPA's Preferred Alternative includes the off-site disposal of over 53,500 cy of soil. This is equivalent to at least 8,000 truck trips to and from the Site via local roads, with more than 10,000 additional truck trips for backfill material.*

Based on discussions with technology vendors and experience at other sites, it is anticipated that design and implementation of *the recommended alternative can be completed in 3 years or less, in contrast to the estimate discussed above for the Preferred Alternative of up to 10 years.*[10]

[PRP Group footnote]
[10] *Given the considerations noted in Section I above, it is likely that the 2 to 3 years estimated by EPA for design, construction, testing and implementation of the Preferred Alternative will in fact be considerably longer, i.e. on the order of at least 5 years, and depending on the specific TD equipment used, could well exceed 10 years.*

Cost. *To assess the likely potential costs associated with in-situ S/S given the Site specific soil/debris characteristics reported for the target remediation area, Battelle issued an RFP requesting budgetary cost proposals from several technology vendors. This RFP specified that, in order to reduce the total volume of soil disposed off-site, the use of in-situ S/S is planned for over 75,000 cubic yards of impacted soil. Battelle requested that the budgetary cost proposal cover two phases of the project: The first phase is a benchscale treatability study to determine the optimal in situ S/S formulation, to be followed by full-scale implementation as the second phase. The total costs for the two phases quoted by S/S technology vendors ranged from \$55 to \$79/cy for Portland cement based S/S. Although higher than the costs estimated in EPA's FS for this component of Alternative S-4, the projected cost range is consistent with information reported by EPA and other Federal entities for other sites.*

Based on these costs provided by the S/S treatment contractors, the HIPG estimates that the Total Construction Cost for remediation of OU2 soils, including the capacitor disposal area removal and redevelopment cap would be on the order of \$24 million utilizing a conservative vendor estimate of \$79/cy and 107,000 cy to be solidified (see cost details provided in Appendix A). The Total Present Worth cost for this alternative is approximately \$36 million. This conservatively based figure derived from actual vendor cost estimates is only 57% of the estimated Total Present Worth Cost of \$62 million for EPA's Preferred Alternative and only 41% of the more likely cost of EPA's Preferred Alternative (see Section II.D) of \$86.8 million.

EPA Response III.D.: The Evaluation of Alternatives section in the Proposed Plan and Record of Decision evaluated Alternative S-4 against the nine evaluation criteria, including the criteria presented in the comment. The primary difference is the between the PRP Group's Section III proposal and Alternative S-4 is the elimination of SVE treatment to address VOC-contaminated soil. While the elimination of SVE addresses the disadvantage that is SVE may need to be completed before solidification, adding to the time required to implement Alternative S-4, in other respects its absence detracts from Alternative S-4, since contaminated soils with principal threat concentrations of VOCs would almost certainly go untreated under this scenario.

The changing remedial priorities of the PRP Group (from its July, 2003 recommendations to the NRRB, to its current recommendations) suggest that the primary remedy driver for the PRP Group's preference is cost. The PRP Group has made many cost assumptions to maximize the difference between its proposal and the Preferred Alternative, some of which have been highlighted in EPA's responses to comments.

III.E. No Need for Separate Treatment (SVE) for VOCs

In the assessment of a S/S-based remedy for this Site as set forth in the OU2 Feasibility Study, EPA included the use of soil vapor extraction (SVE) to reduce VOC concentrations present in soils prior to implementing S/S and capping to address inorganics and other organics (including PCBs). In its evaluation of the this remedial alternative (identified in the Feasibility Study as Alternative S-4), EPA estimated that SVE treatment could extend the implementation of this treatment to as much as 6 to 8 years, which, in turn, could interfere with timely redevelopment of the Site.

As described above, soils having the highest VOC concentrations will largely be removed as part of the capacitor disposal area excavation. To address the presence of VOCs in remaining soils identified as principal threat materials, granular activated carbon can be added to the reagent mix so as to sorb the VOCs and then encapsulate them within a low permeability cement matrix. Utilizing this methodology will eliminate the need for treatment with SVE prior to implementing S/S. Capping the Site with a redevelopment cap following treatment by means of S/S will then provide a second layer of protection against potential leaching of VOCs to ground water and against direct contact exposures. Finally, the potential for unacceptable vapor and particulate emissions during implementation of ex-situ debris separation combined with in-situ S/S will be assessed as part of the Remedial Design, and appropriate control measures will be *specified as necessary.*[11]

[PRP Group Footnote]

[11] *Significantly, EPA did not believe that SVE was necessary as part of the Preferred Alternative. Given that the Preferred Alternative entails the excavation of far more contaminated soils than does an S/S remedy, it follows that SVE would not be necessary in an S/S-based remedy.*

Therefore, SVE is not necessary to address VOCs in soil as part of the HIPG's proposed alternate remedy in order to achieve an acceptable level of both short-term and long-term protectiveness for the Site.

> **EPA Response III.E.:** Treatability studies would be required to determine the effectiveness of using granular activated carbon with the reagent mix so as to sorb the VOCs and then encapsulate them within a low permeability cement matrix. Considering that EPA is not aware of any circumstances where this approach has been successfully implemented, this approach would add additional uncertainty to the HIPG's proposed alternative.
>
> The PRP Group comments that EPA did not believe that SVE was a necessary part of the Preferred Alternative, so it must not be a necessary part of their preferred remedy. EPA did not include SVE in the Preferred Alternative because that remedial alternative called for the soils containing elevated VOCs to be excavated and either treated by LTTD or transported off-site for proper disposal. In contrast, the PRP Group's preferred remedy calls for excavating only the capacitor disposal area, and EPA does not agree that this limited excavation would address all the soils containing principal threat levels of VOCs. The fact that SVE was not a part of the Preferred Alternative clearly does not lead the conclusion that it is not required as part of an a solidification/stabilization remedy.

III.F. Redevelopment Capping

As discussed in the Proposed Plan, EPA has acknowledged the Borough of South Plainfield's Redevelopment Plan for the Site and surrounding properties, which includes complete renovation of the Site for retail, commercial/light industrial "flex" space and warehousing uses. In particular, EPA has indicated that hardscape (i.e., paving and buildings) to be constructed as part of Site redevelopment may be used in place of the multi-layered cap for soils containing contaminant concentrations below principal threat levels. The HIPG agrees with a remedial strategy that incorporates the Site redevelopment plans as integral components of the remedy. In this connection, the use of the "redevelopment cover" in place of a multi-layered cap should include the use of vegetative soil cover to be installed as part of the Site redevelopment grading and landscaping plans. This should be the case for the following reasons:

There are no significant residual risks of exposure associated with the contained soils. *As a practical matter, the only threat of potential exposure remaining after the targeted excavation of the capacitor disposal area and capping by the redevelopment hardscaping and soil cover will be contact with the in-place material during some future maintenance activities that involve excavation. This eventuality will be minimized through the location of "clean corridors" for utilities and similar installations. Should maintenance activities require work outside such clean corridor areas, the workers can be protected from direct contact with the contaminated soils through work practices and personal protective equipment. And, even if due to error or oversight, such precautions are not adequately implemented, any contact would be short term in nature, with a correspondingly significantly lower resulting risk.*

Targeted excavation and S/S addresses the primary principal threat material acting as a potential source to ground water contamination. *The VOCs in soil, the highest concentrations of which are primarily co-located with the capacitor disposal area, will be largely eliminated by the excavation of these materials and by the application of S/S to the remaining principal threat materials. Therefore, a redevelopment cover (asphalt, building slabs, and vegetative soil cover) will cap only the lower, non-principal threat material remaining on-site after the excavation of the capacitor disposal/debris area and the implementation of the S/S treatment technology.*

Redevelopment areas using vegetative cover are largely limited to the perimeter of the property. *According to the current redevelopment plans proposed by the Borough's selected redeveloper, the areas of the Site which are subject to more significant contamination (including the areas to be treated by S/S) will be covered primarily by hardscape (buildings and pavement). The portions of the Site where vegetative cover will be used are limited to an approximately 50' wide landscaped buffer along Spicer Avenue, in the storm water detention basin* *area near existing Buildings 13, 14 and 15, landscaped islands in the parking lots, and the preserved open space and wetlands along Bound Brook. Given the very limited extent of vegetative cover to be used in the main portion of the Site where the principal contamination is located and active soil remediation is being required, the lack of a multi-layered cap in these areas will not materially affect the overall reduction in the infiltration rate achieved by this remedy. A geotextile marker layer can be used to identify underlying native soils in the event excavation in these areas proves necessary at some time in the future.*

EPA Response III.F.: As mentioned in EPA Response III.A.1., EPA has indicated throughout the remedial planning process that a well engineered redevelopment cap incorporating appropriate design elements into the base plan and could be sufficiently protective to be used in place of a multi-layer cap. Vegetative cover alone is an engineering control that may not be adequate protection for much of OU2, but EPA agrees that vegetative cover may be appropriate for certain very limited portions of OU2.

III.G. Summary

Based on an independent evaluation of the applicability of S/S technology to OU2 soils, a remedial approach that combines removal, treatment by S/S and containment to mitigate the exposure pathways that are contributing to the OU2-related risks provides an equally protective alternative to thermal desorption, better satisfies EPA's remedy selection criteria and will allow for the integrated redevelopment of the Site within a reasonable time frame. As outlined above, this remedial approach combines elements of both treatment and containment to mitigate the primary exposure pathways identified in the OU2 risk assessment, and addresses EPA's preference for treatment of principal threat material as defined based on these primary exposure pathways. Further, this remedial approach incorporates the planned redevelopment of the Site as recommended under EPA's Superfund Redevelopment Initiative and in EPA's guidance on the reuse of Superfund sites for commercial use. Finally, the recommended alternative is significantly more implementable and cost-effective than EPA's Preferred Alternative.

EPA Response III.G.: See Responses III.D and III.E, above.

IV. The Alternative Remedy Presented in the HIPG's Comments to the National Remedy Review Board.

As indicated in Section III above, in addition to the alternate remedy detailed in Section III of these comments, the HIPG presented a promising remedial alternative in its July 16, 2003 addressed to the National Remedy Review Board. This remedy is also superior to the Preferred Alternative in terms of avoiding the multiple, serious problems associated with thermal desorption; being protective of human health and the environment; complying with ARARs; comporting with EPA's guidance on properly addressing principal threat material; being superior in terms of effectiveness, implementability and cost; and being more readily integrated in a timely manner with the planned redevelopment of the Site. As previously noted, this second alternative involves the following elements:

Given these elements, this second alternative offers the following significant advantages:

- *Excavation and off-site disposal of principal threat material, including the material within the capacitor/debris disposal area which represents the primary source of principal threat material (both PCBs and VOCs).*

- *Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.*

Given these elements, the second alternative offers the following significant advantages:

- *There are no significant residual risks of exposure associated with the contained soils. As a practical matter, the only threat of potential exposure remaining after the targeted excavation of the Site and capping by the hardscaping and soil cover will be contact with the in-place material during some future maintenance activities that involved excavation. Under this scenario, the workers can be protected from direct contact with the contaminated soils. However, in the event such precautions were not followed, contact would be short term in nature, and at a target cancer risk level of 10-2 and target HI of 100, "principal threat" levels under this type of exposure would correspond to a concentration on the order of 10,000 mg/kg or 10 times higher than the maximum concentration proposed to be left in-place.*

- *Targeted excavation addresses the primary principal threat* *material acting as a potential source to ground water contamination. The VOCs in soil, the highest concentrations of which are primarily co-located with the capacitor disposal/debris area, will be largely eliminated by the excavation of these materials. The redevelopment cover (asphalt, building slabs, vegetative soil cover) will contain the lower threat material remaining onsite after the excavation of the capacitor disposal/debris area. Any residual impacts to groundwater by the contained materials remaining on-site will be insignificant.*

- *Following targeted excavation, Site redevelopment will adequately address the primary risk pathways of concern. According to EPA's baseline human health risk assessment, the majority of the cancer risks and non-cancer HIs under the future use scenario are associated with exposure to non-VOCs in soil via incidental ingestion, dermal contact and/or particulate inhalation. The exception to this is for the future indoor worker in the currently undeveloped portion of the Site. As indicated above, soils having elevated VOCs will largely be removed as they are co-located with the capacitor disposal/debris area. The risks associated with the soils left in-place can be adequately mitigated via pathway elimination - i.e., the construction of large areas of hardscape (pavement and buildings) as part of the Site redevelopment will eliminate routine exposures to contaminants in site soils, regardless of concentration.*

Finally, it should be emphasized that the removal of even principal threat material is not required in all cases. EPA's Guidance on Remedial Actions for Superfund Sites with PCB Contamination recognizes that in some cases it may be appropriate to contain principal threats as well as low threat material, because there are large volumes of contaminated material or the PCBs are mixed with other contaminants that makes treatment impracticable (USEPA, 1990). Such material that is not treated should be contained to prevent access that would result in exposures exceeding protective levels. Indeed, in the case of the Raymark Site with 21,000 cy of on-site principal threat wastes, EPA determined that the risks and costs associated with treatment of the substantial volumes of contaminated soil waste materials on-site outweighed the limited increase in protectiveness afforded. Therefore, treatment was not found to be practical, and a capping remedy was selected for the Raymark Site.

EPA did not adequately consider this proposed remedial *alternative in its OU2 Feasibility Study or in its Proposed Plan. However, this alternative remains a viable remedy for the Site, since it is protective of human health and the environment, implementable, and cost-effective.*

EPA Response IV.: EPA does not agree with the PRP Group's assessment of the risks posed by the Site, as discussed here and in Section V of the comments. The PRP Group submitted comments to the NRRB in July 2003 containing an earlier, and very similar, version of this comment. The NRRB and EPA Region 2 evaluated these comments during the remedial planning for OU2, and concluded that the PRP's approach for minimizing the size of the principal threat excavation required was not satisfactory. The PRP Group also detailed its "numerical-based approach" to defining "principal threat" in correspondence to EPA in January and April 2004. EPA's response to the April 2004 correspondence can be found in the Administrative Record in a letter dated April 23, 2004 from George Pavlou, Director of the Emergency and Remedial Response Division, to Michael Last, counsel for Dana Corporation. In essence, EPA disagrees with the PRP Group's interpretation of EPA guidance regarding principal threats and on EPA's 1990 *Guidance on Remedial Actions for Superfund Sites with PCB Contamination*. The 1990 guidance identifies principal threats as contaminated soils at concentrations greater than or equal to 500 ppm PCBs at commercial or industrial sites, and EPA has identified this principal threat Remediation Goal for soils at the Site.

In many other respects, the proposal presented in this Section IV resembles Alternative S-3, which includes principal threat excavation, off-site disposal, and capping. EPA evaluated Alternative S-3 in the FS, and performed a detailed analysis in the Proposed Plan. EPA's basis for preferring the hybrid of Alternatives S-3 and S-5 is documented in the Proposed Plan, and in this decision document.

V. Comments on the Remedial Action Objectives

According to the Proposed Plan, EPA proposes to implement a remedy which includes active remediation (through treatment and/or removal and off-site disposal) of soils designated as "principal threat" material, and containment of soils contaminated at lower concentrations. EPA has designated principal threat material as those soils contaminated with PCBs at concentrations greater than 500 ppm and with other *contaminants that may act as a continuing source of ground water contamination. EPA identified the August 1990 guidance entitled A Guide on Remedial Actions at Superfund Sites with PCB Contamination as the basis for establishing a PCB concentration greater than 500 ppm as the principal threat cleanup goal for PCBs, and the New Jersey Impact to Groundwater Soil Cleanup Criteria (IGWSCC) as the principal threat cleanup goal for other constituents of potential concern.*

However, in attempting to provide treatment for principal threat wastes, EPA fails to apply appropriately its own guidance when defining what constitutes a principal threat. The following details the shortcomings of EPA's approach to defining principal threat waste as set forth in its Proposed Plan.

- ***Definition of Principal Threat Concentrations***

In designating soils for active remediation, EPA has failed to apply appropriately its guidance on principal threat materials. Properly applied, EPA's guidance dictates that the volumes of principal threat materials will be substantially less than projected by EPA. EPA's definition of principal threat material is as follows: "Principal threat wastes are those source materials [including contaminated soil] considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner and/or would present a significant risk to human health or the environment should exposure occur" (USEPA, 1991). EPA has not established an absolute threshold level of risk for identifying principal threat materials. However, it considers as principal threat "those source materials with toxicity and mobility characteristics that combine to pose a potential risk several orders of magnitude greater than the risk level that is acceptable for the current or reasonably anticipated future land use, given realistic exposure scenarios" (USEPA, 1997b, emphasis added). In Superfund, acceptable risk levels are cumulative excess cancer risk to an individual based on reasonable maximum exposure for both current and reasonably expected future land use of 10^{-4} or less, and a non-cancer hazard index (HI) of 1 or less (USEPA, 1991a). Therefore, contaminated soil that poses a cumulative excess cancer risk higher than 10^{-2} or represents a HI higher than 100 (i.e., at least two orders of magnitude higher than the acceptable levels) might be reasonably viewed as a principal threat material for which treatment should be considered. Conversely, contaminated soil that poses cumulative excess cancer risk lower than 10^{-2} or represents a HI lower than 100 may be considered as low-level threat material for which containment would be appropriate.

EPA Response V.1.: See EPA Response IV, above.

EPA also fails to consider future site use in its evaluation for the alternatives which target principal threat materials. EPA's Principal Threat Analysis should be conducted in the context of the future site redevelopment. As accepted by EPA (and NJDEP) for the former Hyatt Clark Industries, Inc. Site in Clark, New Jersey, the principal threat assessment should be based on potential risks under likely future conditions following site redevelopment, rather than hypothetical risks under generic land use conditions. Given the specific redevelopment plans for this Site (i.e., largely covered by pavement and buildings for retail, commercial/light industrial "flex" space and warehousing), the potential risks to persons who may be exposed to soils underlying the pavement and buildings, such as utility maintenance workers, should serve as the basis for the principal threat analysis rather than a "routine worker" who is unlikely to come in contact with soils under the pavement or buildings during daily activities.

EPA Response V.2.: The BHHRA evaluated current and future health effects in an industrial setting, consistent with the proposed redevelopment of the facility property.

There is direct precedent, including in EPA Region II, for setting remedial action objectives (RAOs) in Records of Decisions (RODs) which do not rely on constituent specific cleanup goals, including principal threat-based goals, but rather identify cleanup based on overall risk reduction. For example, the ROD for the Raymark Industries, Inc. site in Stratford, Connecticut (EPA/ROD/R01-96/116, 1995) and the ROD for the Scientific Chemical Processing site in Carlstadt, New Jersey (EPA/ROD/R02-02/11, 2002) address the remediation of principal threat materials (including PCBs and VOCs) without specifying constituent-specific numerical cleanup goals to identify these materials. Of particular relevance to this Site is the approach utilized at the Scientific Chemical Processing site to identify a "Hot Spot" area of high-level or principal threat waste and to define the RAOs from a risk-based perspective. Specifically, as part of the Feasibility Study for this site, the definition of a Hot Spot was "an area where, if chemical constituents were removed and/or treated, the site-wide risk would be reduced by over an order of magnitude; and an area small enough to be considered separately from remediation of the entire Fill area." In articulating the site remediation standards for the Scientific Chemical Processing site, USEPA Region II

recognized that no chemical-specific ARARs exist for soil, so that remediation goals were necessarily risk-based. The stated RAOs for soil were to:
- "Mitigate the direct contact risk and leaching of contaminants from soil, fill material and sludge into the groundwater;
- Reduce the toxicity and mobility of the Hot Spot contaminants via treatment; [and]
- Perform remediation in such a manner that may allow site re-use for certain limited commercial purposes."

> **EPA Response V.3.:** RAOs are identified to protect human health and the environment based on considerations of the chemicals of concern, exposure routes, receptors, and acceptable contaminant levels for each exposure pathway. As a result, RAOs are developed based upon site-specific conditions and may vary at different sites.

• ***Principal Threat Concentration for PCBs in On-Site Soils***
EPA is relying on outdated and inappropriate PCB criteria for estimating contaminated soil volumes. EPA's definition of principal threat material as soils containing PCB concentrations greater than 500 mg/kg is based on outdated information presented in the 1990 Guidance on Remedial Actions for Superfund Sites with PCB Contamination. As summarized in Appendix C, the assumptions used by EPA in developing the criteria suggested in the 1990 guidance, including the toxicity/data for PCBs, have been updated since 1990. Use of updated toxicity data and exposure assumptions would result in a different PCB concentration defined as principal threat.

Specifically, the numerical-based approach for defining concentrations of PCBs to be designated as principal threat that would be consistent with Superfund precedent, based upon EPA's principal threat and risk assessment guidance, and would use current toxicity data for PCBs, can be stated as follows:

Soil remediation should be conducted to the extent necessary to achieve a waste management strategy that reduces Site risks to within an EPA-accepted risk range (excess cancer risk range of 10^{-6} to 10^{-4}, and a noncancer hazard index of 1 or less; OSWER Directive 9355.0-30). Soil removal or treatment shall be conducted to meet a maximum lifetime excess cancer risk level of 1×10^{-2} and a noncancer hazard index of 100 based on reasonable exposure for both current and reasonably expected future land. For key indicator chemicals detected at the subject site, namely polychlorinated biphenyls (PCBs), this risk level corresponds *to an individual constituent principal threat level[12] of 1,100 mg/kg.*

[12] *"Principal threat cleanup levels" are scaled from EPA Region 9 preliminary remediation goals for industrial soils which are calculated at a target cancer risk level of 10-6 and a noncancer hazard index of 1.*

> **EPA Response V.4.:** As discussed in the Proposed Plan in the discussion of Remedial Action Objectives, EPA's August 1990 guidance, entitled "A Guide on Remedial Actions at Superfund Sites with PCB Contamination," states that principal threats will include soils contaminated at industrial sites at concentrations greater than or equal to 500 parts per million (ppm) total PCBs, rather than 1,100 ppm as proposed by the PRP Group. The PRP Group disagrees with EPA's use of this guidance in developing its Remedial Action Objectives. This is an existing, applicable Agency guidance that has been consistently used to develop cleanup decisions at Superfund sites.

EPA has inadequately evaluated the concentrations in soils that have the potential to impact ground water. EPA has relied on the NJDEP criteria for non-PCB contaminants of concern (i.e., NJDEP IGWSCC) to define soil to be remediated in order to mitigate potential impacts to ground water. NJDEP's IGWSCC have not been promulgated and, as such, are not applicable or relevant and appropriate requirements ("ARARs"). Rather, NJDEP has published these criteria merely as guidance levels for its site remediation program. Site-specific evaluation of potential impacts to ground water from soil contaminants, taking into consideration the possible remedies for ground water, would very likely increase the threshold concentrations for non-PCB contaminants of concern that would meet the definition of principal threat.

> **EPA Response V.5.:** The State of New Jersey has developed impact-to-groundwater soil cleanup criterion (IGWSCC) for VOCs. Because this is not a promulgated standard, it is not an "Applicable or Relevant and Appropriate" standard (ARAR) but rather a "To Be Considered" (TBC) criterion. EPA is using the IGWSCC as Remediation Goals at the Site for contaminants other than PCBs that may act as a continuing source of groundwater contamination.

Further, the primary concern with respect to impact to ground water is associated with elevated VOC concentrations in soil. The VOCs in soil, the highest concentrations of which are primarily *co-located or immediately adjacent to the capacitor disposal area, will be largely eliminated by the excavation of these materials as specified in the Proposed Plan. The redevelopment cover (asphalt, building slabs, and vegetative soil cover) will contain the lower threat material remaining on-site after the excavation of the capacitor disposal area. Any residual impacts to groundwater by the contained materials remaining on-site will be insignificant. The potential significance of these residual concentrations should be further evaluated in consideration of (1) the overall groundwater remedy, and/or (2) a site-specific criteria for assessing the potential leaching of VOCs to groundwater. EPA's failure to integrate into its analysis of possible OU2 soil remedies the potential groundwater remedies which may be implemented at the Site poses the significant risk that EPA will select in both OU2 and OU3 inefficient and uncoordinated remedies to address both soil and groundwater issues.*

EPA Response V.6.: EPA does not agree with the PRP Group's assertion that soils containing principal threat concentrations of VOCs will be eliminated by excavation and off-site disposal of the capacitor disposal areas. Appendix I, Figure 6 of the ROD identifies soils containing VOCs at concentrations exceeding NJDEP's IGWSCC. Although some of the highest concentrations of VOCs are located in the capacitor disposal area, Figure 6 indicates that there are soils containing VOCs at concentrations exceeding NJDEP's IGWSCC outside of the capacitor disposal area.

EPA typically divides Sites into separate phases, or operable units for remediation purposes. In addition, the Site was divided into separate phases in order to allow the timely redevelopment of the facility property, instead of waiting for the completion of the RI/FS for the groundwater and Bound Brook components, which are ongoing and expected to take up to several years to complete. While OU3 will focus on groundwater contamination, OU2 addresses facility soil contamination that acts as a source of contamination to the groundwater. Therefore, EPA does not believe that managing the Site in operable units will lead to inefficient and uncoordinated remedies.

In summary, the risk-based approach employed at the Scientific Chemical Processing, Raymark and Hyatt Clark sites provides guidance for defining principal threat materials in terms of cumulative risk and setting performance-based RAOs that is directly transferable to the Hamilton Industrial Park Site. EPA *estimated soil volumes should be based on current site-specific risk assessment approaches, including the assessment of total risk over an exposure area, not just risk associated with a single constituent at a single sampling point. Use of a site-specific risk-based approach for defining "principal threat" material as soils in an exposure area exhibiting an exposure concentration in excess of several orders of magnitude greater than the acceptable risk level would result in lower estimates of soil to be actively remediated, while still protecting human health and the environment consistent with applicable EPA guidance.*

ATTACHMENT A

PROPOSED PLAN

Superfund Program
Proposed Plan

U.S. Environmental Protection Agency, Region II

Cornell-Dubilier Electronics Site

July 2004

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternatives for the remedy to address contaminated soils and buildings at the former Cornell-Dubilier Electronics (CDE) plant site, also known as the Hamilton Industrial Park, and provides the rationale for those preferences.

The Preferred Alternative for soils calls for excavation of contaminated soils containing polychlorinated biphenyls (PCBs) at concentrations greater than 500 parts per million (ppm) and other contaminants that may act as a continuing source of groundwater contamination. The excavated soil would be addressed through a combination of on-site low-temperature thermal desorption and off-site disposal. EPA's Preferred Alternative for soils is a hybrid of Alternatives S-3 and S-5, described in more detail below. Contaminated soil and debris from a capacitor disposal area in the rear of the facility would be also excavated and transported off-site for disposal. Contaminated soils containing less than 500 ppm PCBs and other inorganic contaminants would be capped on site. Institutional controls would be employed to ensure that future site activities would be conducted so as to assure the protectiveness of the cap, with appropriate health and safety controls, and to prohibit future unrestricted use of the property.

The 18 on-site buildings are contaminated to varying degrees with PCBs and other contaminants. The Preferred Alternative for buildings calls for the demolition of the on-site buildings and off-site disposal of the contaminated debris. Certain buildings would need to be demolished as part of the proposed soil remedy, and an expected redevelopment of the industrial park anticipates demolition of all the existing structures. However, because it is possible that not all of the structures will have to be demolished, the Preferred Alternative for the buildings includes a contingency remedy that would allow for the decontamination and surface encapsulation of certain buildings that may not need to be demolished for the other reasons cited above. Institutional Controls would also be employed for any structures that are not demolished.

Dates to remember:
MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
July 6 - August 5, 2004
U.S. EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING:
July 13, 2004
U.S. EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at Borough Hall, 2480 Plainfield Avenue, South Plainfield, New Jersey at 7:00 p.m.

For more information, see the Administrative Record at the following locations:

U.S. EPA Records Center, Region II
290 Broadway, 18th Floor.
New York, New York 10007-1866
(212) 637-3261
Hours: Monday-Friday - 9 am to 5 pm

South Plainfield Library
2484 Plainfield Avenue
South Plainfield, New Jersey 07080
(908) 754-7885
Hours:
Monday, Wednesday, and Thursday - 10 am to 9 pm
Tuesday and Friday - 10 am to 6 pm
Saturday - 9 am to 5 pm
Sunday - 1:30 pm to 5 pm

The U.S. Environmental Protection Agency (EPA) has divided the site into separate phases, or operable units for remediation purposes. On September 30, 2003, EPA, with support from the New Jersey Department of Environmental Protection (NJDEP), selected a remedy for Operable Unit 1 (OU1), the contaminated residential, commercial, and municipal properties in the vicinity of the former CDE facility.

This Proposed Plan addresses Operable Unit 2 (OU2), which includes the remediation of source materials, consisting of contaminated facility soils and buildings at the former CDE facility. Additional operable units will address the contaminated groundwater and the sediments of the Bound Brook. Final remedies to address the groundwater and the Bound Brook will be presented in future Proposed Plans and Records of Decision (RODs).

This Proposed Plan includes summaries of all the cleanup alternatives evaluated for use at the former CDE facility. This document is issued by EPA, the lead agency for site activities, and NJDEP, the support agency. EPA, in consultation with NJDEP, will select a final remedy for contaminated soils and buildings at the former CDE facility after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with NJDEP, may modify the Preferred Alternatives or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

EPA is issuing this Proposed Plan as part of its community relations program under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund). This Proposed Plan summarizes information that can be found in greater detail in the CDE OU2 Remedial Investigation and Feasibility Study (RI/FS) reports and other documents contained in the Administrative Record file for this site. EPA and NJDEP encourage the public to review these documents to gain a more comprehensive understanding of the site and Superfund activities that have been conducted at the site.

SITE HISTORY

The former CDE facility, now known as the Hamilton Industrial Park, is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey and consists of approximately 26-acres containing 18 buildings that are currently used by a variety of commercial and industrial tenants. The fenced 26-acre facility is bounded on the northeast by the Bound Brook and the former Lehigh Valley Railroad, Perth Amboy Branch (presently Conrail); on the southeast by the Bound Brook and a property used by the South Plainfield Department of Public Works; on the southwest, across Spicer Avenue, by single-family residential properties; and to the northwest, across Hamilton Boulevard, by mixed residential and commercial properties (see Figure 1).

CDE operated in South Plainfield from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. PCBs and chlorinated organic degreasing solvents were used in the manufacturing process, and the company apparently disposed of PCB-contaminated materials and other hazardous substances directly on the facility soils. CDE's activities evidently led to widespread chemical contamination at the facility, as well as migration of contaminants to areas adjacent to the facility. PCBs have been detected in the groundwater, soils and in building interiors at the industrial park, at adjacent residential, commercial, and municipal properties, and in the surface water and sediments of the Bound Brook. High levels of volatile organic compounds (VOCs) have been found in the facility soils and in groundwater. Since CDE's departure from the facility in 1962, it has been operated as a rental property, with over 100 commercial and industrial companies operating at the facility as tenants. Some of these tenants may have contributed to some site contamination, but the PCB and VOC contamination appears to be primarily attributable to CDE's operation.

In 1996, NJDEP conducted a Site Inspection and collected surface soil, surface water, and sediment samples at the facility property. In June 1996, at the request of NJDEP, EPA collected and analyzed additional soil, surface water and sediments at the facility. The results of the sample analyses revealed that elevated levels of PCBs, VOCs, and inorganics were present at the site.

As a result of the contamination found at the facility, in March 1997, EPA ordered the owner of the facility property, D.S.C. of Newark Enterprises, Inc. (DSC), a potentially responsible party (PRP), to perform a removal action to mitigate risks associated with contaminated soil and surface water runoff from the facility. The removal action included paving driveways and parking areas in the industrial park, installing a security fence, and implementing drainage controls, and was substantially completed by the fall of 1997.

In 1997, EPA conducted a preliminary investigation of the Bound Brook to evaluate the potential impacts of contamination on human health and the environment. Elevated levels of PCBs were found in fish and sediments of the Bound Brook. As a result of these investigations, NJDEP issued a fish consumption advisory for the Bound Brook and its tributaries, including nearby New Market Pond and Spring Lake.

In 1997, EPA began collecting surface soil and interior dust samples from residential and commercial properties near the CDE facility. The results of the sampling revealed PCBs in soil and interior dust that posed a potential health concern for residents of several of the properties tested. These investigations led to removal actions at 15 residential properties, conducted from 1998 to 2000. In July 1998, EPA included the CDE site on its National Priorities List.

In 2000, EPA expanded the investigation and began collecting soil samples from properties further from the CDE facility. This sampling revealed three additional properties with PCBs in soil that pose a potential health threat to residents. In addition, the sampling revealed some properties in need of more extensive sampling. In September 2003, EPA selected a remedy to address the contaminated soil at properties in the vicinity of the former CDE facility. A projected 2,100 cubic yards of contaminated soil will be excavated from those properties requiring soil cleanup. The remedy includes indoor dust remediation where PCB-contaminated dust is encountered. Additional sampling is planned for properties where right-of-way sampling revealed elevated levels of PCBs, to determine whether or not remediation is required. The sampling will include exterior soils and the collection of dust samples from the interiors of homes.

In 2000, CDE and Dana Corporation initiated discussions with the Borough of South Plainfield regarding the future redevelopment of the Hamilton Industrial Park, and how that redevelopment might be accomplished as part of a remedy for the facility soils and buildings, i.e., OU2. On December 6, 2001, the South Plainfield Borough Council adopted a resolution designating the Hamilton Industrial Park and certain lands in the vicinity of the industrial park as a "Redevelopment Area" pursuant to New Jersey Local Redevelopment and Housing Law. The Borough retained a planning consultant to prepare a redevelopment plan for the designated area, and on July 15, 2002, the Borough Council approved an ordinance adopting the redevelopment plan. EPA has participated in this future-use planning for the facility as part of the development of the FS for this operable unit.

ENFORCEMENT

PRPs for the site include Cornell-Dubilier Electronics, Inc. (CDE), Dana Corporation, Dana Corporation Foundation, and Federal Pacific Electric Company. In addition, DSC, the current owner of the Hamilton Industrial Park, has been named as a PRP. Five administrative orders have been issued to various PRPs for the performance of portions of removal actions required at the site.

The first order, a Unilateral Administrative Order (UAO) issued to DSC in 1997, required the installation and maintenance of site stabilization measures, described above. In 1998 and 1999, EPA entered into two separate Administrative Orders on Consent (AOCs) with PRPs concerning the removal of PCB-contaminated soil from thirteen properties on Spicer Avenue, Delmore Avenue, and Hamilton Boulevard. DSC and CDE signed the 1998 AOC (addressing six properties), and Dana and CDE signed the 1999 AOC (addressing seven properties). EPA issued another UAO in 1999 to Federal Pacific Electric and DSC, requiring those parties to participate and cooperate in the soil removal at the properties covered by the 1999 AOC. In April 2000, EPA entered into an AOC with DSC requiring the removal of PCB-contaminated soil from one additional property on Spicer Avenue. DSC agreed to perform the work required under the AOC, but failed to do so.

In July 1998, EPA offered the PRPs an opportunity to perform a comprehensive study of the site, called a Remedial Investigation and Feasibility Study (RI/FS), to help determine the nature and extent of contamination. After EPA and the PRPs were unable to agree on the scope of the RI required at the site, EPA elected to perform the RI/FS using federal funds.

On September 30, 2003, EPA issued a Record of Decision for OU1 at the site. EPA expects to enter into negotiations with some of the PRPs concerning their possible performance of the Remedial Design and Remedial Action (RD/RA) for OU1, and expects to complete those negotiations during the summer of 2004.

SITE CHARACTERISTICS

Based on the characteristic surface features of the facility property, two major areas can be described. The northwestern portion of the Hamilton Industrial Park is largely paved or occupied by buildings. This area is relatively level. The 18 buildings are constructed of wood frame or brick and several of the buildings are subdivided. The buildings are currently used by a variety of commercial and industrial tenants. The southeast area of the property is primarily an open field, with some wooded areas. The property drops steeply to the southeast, and the eastern portion of the property consists of wetlands bordering the Bound Brook (see Figure 2).

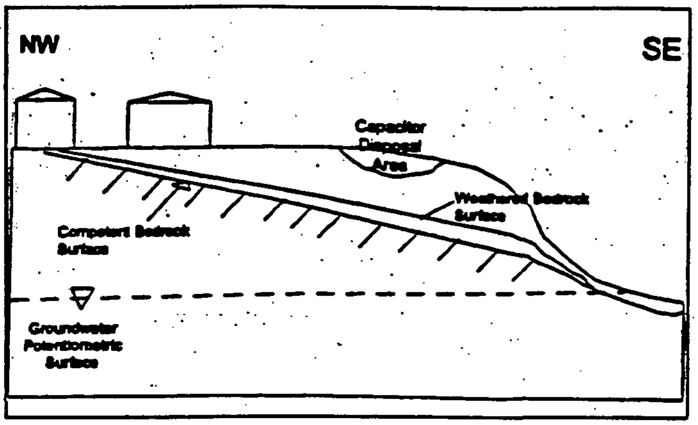

Figure 2 - Cross Section of Hamilton Industrial Park
Not to Scale

The property is underlaid by the Brunswick Formation, a fractured bedrock geologic formation, topped with a layer of overburden that is a mixture of glacial deposits and man-made fill. The overburden is absent beneath a number of the buildings in the northwest corner of the property with increasing thickness towards the Bound Brook, to a maximum depth of about 15 feet. A weathered siltstone unit, approximately 1 to 8 feet thick above the bedrock surface, extends beneath most of the property. Fill material identified throughout the facility property consisted primarily of cinders, ash, brick, glass, metal, slag, and wood fragments.

After geophysical investigations identified a number of subsurface anomolies, test pits were excavated in the central portion of the facility. During excavation of test pits within this anomalous area, fill material including scrap metal, automobile parts, steel cables, styrofoam sheeting, ceramic electrical components, and empty/crushed drums were unearthed. Near the location of a former truck driving school was found a disposal area for capacitors manufactured by CDE that failed to meet specifications and could not be reused. Some of the highest contaminant levels were found in this dumping area, as discussed in more detail below.

Remedial investigative activities performed for OU2 consisted of sampling building floor dust, shallow and subsurface soil, perched water, drainage system sediment, and drainage system standing water. There were many chemicals detected in the soils and buildings at the former CDE facility. Some of these chemicals occur as natural components of soil and others are present due to past activities associated with the site. PCBs were identified as a contaminant of concern in previous investigations that started in 1996. "Aroclor" is the trade name given to commercially manufactured mixtures of PCBs. The different mixtures are identified with a four digit number (e.g., Aroclor-1254). Aroclors were chosen for evaluation because they were used in the former manufacturing processes at the CDE facility and are bioaccumulative and persistent in the environment. The Aroclors detected at the industrial park include Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260. The following summarizes the results of previous investigations and the RI for OU2. Groundwater monitoring wells were also installed and sampled, though groundwater remediation was not evaluated in OU2.

Building Floor Dust

In 1997, EPA's removal program collected a total of 27 wipe samples from 12 of the 18 facility buildings, and building material samples (dust and concrete chips) from two buildings, and analyzed the samples for PCBs, lead, and cadmium. Aroclor-1254, Aroclor-1260, lead, and cadmium contamination were identified in all 12 buildings tested.

Dust samples collected from the 18 facility buildings in the summer of 2000, as part of the RI, revealed PCBs in all 18 buildings, and elevated PCB concentrations (i.e., greater than 500 ppm) present in three buildings. Concentrations of Aroclor-1254 as high as 8,300 ppm and lead as high as 61,700 ppm were measured in the dust samples. Elevated metals concentrations were also found in all 18 buildings. For example, arsenic, cadmium, chromium, and mercury were measured in each of the buildings at a maximum concentration of 100 ppm, 428 ppm, 894 ppm, and 24.4 ppm, respectively. A discernible, consistent concentration pattern was not generally present for the detected metals.

As part of the soil investigation discussed below, borings were drilled through the concrete slabs in each of the buildings and soil samples were collected from beneath the slab. The intent of this effort was to delineate potential shallow and upper subsurface soil contamination beneath the northwestern portion of the property. The results of this sampling revealed that soils beneath the buildings are contaminated with various contaminants.

Soil

To investigate the potential source areas and determine the extent of soil contamination for the facility property, shallow (i.e., 0 to 2 feet below ground surface/cover) and subsurface (i.e., greater than 2 feet below ground surface/cover) soil samples were collected. During the RI, 96 shallow soil samples and 59 subsurface soil samples were collected, including samples collected from test pits excavated within the central portion of the property.

PCBs are the most prevalent contaminants found on the property, and are present as a direct result of former CDE facility activities. Shallow and subsurface soil sample analytical results indicated the presence of PCB compounds in almost all of the samples collected (92 percent). Four individual Aroclor constituents (-1242, -1248, -1254, and -1260) were detected at the property. Surface soil sampling revealed PCB concentrations at a maximum concentration of 51,000 ppm. Of the 96 shallow soil samples collected during the RI, 46 samples had concentrations of PCBs greater than 10 ppm and 15 samples had concentrations greater than 500 ppm. Subsurface soil sampling revealed PCB concentrations at a maximum concentration of 130,000 ppm. Of the 59 subsurface soil samples collected during the RI, 16 samples had concentrations of PCBs greater than 10 ppm and 8 samples had concentrations of PCBs greater than 500 ppm.

Test pit excavations unearthed capacitors that appeared corroded and/or partially burned. In addition, during excavation of test pits, white and blue crystalline powder, electrical components, and other materials were unearthed. Based on the observed presence of capacitors in the test pits and interpretation of the geophysical survey, it is estimated that the potential area of buried capacitor debris is approximately 51,100 square feet.

Dioxins/Furans

Due to the presence of charred debris in the test pits and the fact that burning PCBs can result in the generation of dioxin furans, a limited set of soil samples were subjected to dioxin and furan analysis. Although analyzed in only a few shallow and subsurface soil samples, dioxins and furans were detected during the OU2 RI soils investigation.

- Individual dioxin/furan constituents ranged up to 13,5[illegible]0 pico grams per gram (pg/g). The maximum concentrations for the dioxin/furan homologs (i.e., compounds with an equal number of chlorine substitutions) was 52,850 pg/g.

- 2,3,7,8-TCDD (dioxin) was detected at a maximum concentration of 8 parts per billion (ppb).

PCB Congeners

Because of the high concentrations of PCBs present in the soils in the southeastern portion of the site, a limited number of surface and subsurface soil samples underwent PCB congener analysis. Individual congeners can have a toxicity similar to dioxin and, if present in sufficient concentrations, can pose a risk higher than the PCB congeners that lack the chemical properties of dioxin.

- Of the 94 congener compounds or compound combinations analyzed, up to 72 constituents were present.

- The maximum total PCB congener concentration detected in the soils was 39,000 ppm.

- 3,3',4,4'-tetrachlorobiphenyl, a dioxin-like congener, was present at a maximum concentration of 2,200 ppm.

Volatile Organic Compounds

Elevated concentrations (i.e., up to ppm levels) of chlorinated VOCs in both the subsurface soil and the perched water within and/or immediately adjacent to areas with elevated concentrations of PCB constituents in the soils have likely contributed to the leaching and solubilization of the PCB constituents through co-solvency effects.

- Surface soil sampling revealed TCE contamination at a maximum concentration of 47 ppm. Subsurface soil sampling revealed TCE contamination at a maximum concentration of 33 ppm.

- Elevated levels of cis-1,2-DCE; trans-1,2-DCE; 1,1-DCE; tetrachloroethene (PCE); TCE; vinyl chloride; methylene chloride; 1,2,4-trichlorobenzene; and 1,2-dichloropropane were also detected in soils.

Semi-Volatile Organic Compounds (SVOCs)

- Elevated concentrations of SVOCs (mainly polycyclic aromatic hydrocarbons (PAHs)), up to 1,554 ppm total PAHs, were detected in soils.

Pesticide Compounds

- Nineteen pesticides were detected across the facility property.

- Aldrin, dieldrin, and 4,4'-DDE were detected at maximum concentrations of 1,100 ppm, 520 ppm, and 1,200 ppm, respectively.

Inorganic Compounds

- Elevated concentrations of 23 different metals were detected across the facility property.
- Arsenic and lead were detected at maximum concentrations of 1,060 ppm and 52,600 ppm, respectively.

Perched Water

Water encountered in the overburden soil and weathered bedrock intervals during the RI was sampled to characterize potential source areas, to evaluate potential zones of contamination, and to identify potential contamination migration pathways.

- PCBs , PCB congeners, VOCs, SVOCs, pesticides, and metals were detected at elevated concentrations in the perched water samples collected in the overburden soil.

Facility Drainage System

As part of the RI, an investigation of the facility drainage system was conducted to determine the level of contamination in the drainage system and to determine the potential for the system to be a source and/or facilitate the transport of contamination

Dye testing indicated that the facility drainage system is connected to outfalls that discharge to the Bound Brook. The existing facility drainage system sends surface water runoff from the industrial park to the Bound Brook. The investigation also revealed that floor drains located within the buildings at the industrial park are connected to this facility drainage system.

PCBs, VOCs, SVOCs, pesticides, and metals were detected in sediment and standing water samples collected from the catch basins.

The site stabilization measures (i.e., paving and silt fencing) that were implemented by the property owner in 1997 have mitigated the potential for site contaminants to reach the Bound Brook through overland runoff and through the facility drainage system. However, this migration route continues to remain a potential threat.

Groundwater

Groundwater monitoring wells were installed at the Hamilton Industrial Park at depths ranging from 32 feet to 62 feet, with groundwater found at approximately 35 feet below ground surface (bgs), in the bedrock unit. Based on the investigation conducted to date, groundwater flow is to the northwest. Sampling results revealed that groundwater at the site is very highly contaminated with VOCs and PCBs, with PCBs present as a result of high VOC content and cosolvency effects. Concentrations of TCE as high as 120,000 parts per billion (ppb) and PCBs as high as 84 ppb were measured in the groundwater samples. Elevated levels of VOCs and PCBs were also detected in the perched water sampled during excavation of the test pits and installation of the groundwater monitoring wells. The horizontal and vertical extent of groundwater contamination has not been determined because all of the existing monitoring wells have been installed within the industrial park. However, additional groundwater monitoring wells will be installed to adequately characterize flow conditions and the extent of contamination. The results of this additional work will be presented in the RI/FS for groundwater.

Soils at the industrial park contaminated with PCBs and VOCs appear to be an ongoing source of groundwater contamination. Metals found at elevated levels in soils were not found in the groundwater and, therefore, the facility soils do not appear to be a continuing groundwater threat based upon the metals content.

Cultural Resources Assessment

In May 2003, a Stage IA Cultural Resource Investigation was performed pursuant to Section 106 of the National Historic Preservation Act, 16 U.S.C. 47. Based on this Stage IA Investigation, it has been determined that many buildings at the Hamilton Industrial Park have the potential to be eligible for the National Register of Historic Places (NRHP). The NRHP eligibility would derive primarily from the activities of the Spicer Manufacturing Corporation, and its successor, Dana Corporation.

The first major industry within South Plainfield began in 1912 with the construction of the Spicer Manufacturing Corporation plant on the site of the existing Hamilton Industrial Park. The company's founder, Clarence Spicer, designed the "universal joint" transmission when an engineering student at Cornell University and received a patent in 1903. Until the company's departure to Ohio in the late 1920's, the Spicer Manufacturing Corporation manufactured the "universal joint", an essential drive-shaft component of automobiles, at this facility. As a result of this investigation, it has been determined that standing structures at the Hamilton Industrial Park should be recorded for the New Jersey Historic Preservation Office (NJHPO) and evaluated for NRHP-eligibility. Although the standing structures probably do not meet NRHP-criteria based on architectural integrity, the structures at the Hamilton Industrial Park should be evaluated for historical significance.

Cultural resources survey maps from NJHPO indicate that archeological sites, as well as many lithic scatters, have been identified along the banks of Bound Brook. Prehistoric settlement patterns were highly focused over more than 8,000 years along the wetland margins of the stream terraces along the Bound Brook. One prehistoric site has been identified on the property of the CDE site along the north bank of the Bound brook. Five prehistoric sites were identified in the general vicinity of the former CDE facility, and a large prehistoric site was excavated to the east of the facility property.

The facility property was identified as the location for a circa 1800 sawmill. The NJHPO files indicate that the Brooklyn Mills historic mill complex (circa 1702) was formerly located in South Plainfield, and in 1974, surviving foundations were nominated for the NRHP; however, no action was taken to list the property. A blacksmith shop (circa 1895) and the destroyed Randolph Burial Ground (circa 1790) were located north of the CDE site. No properties in South Plainfield are presently listed on the NRHP.

SCOPE AND ROLE OF THE ACTION

For the purposes of planning response actions, EPA has addressed the site in separate operable units. The September 2003 ROD selected a remedy for OU1, the contaminated residential, commercial, and municipal properties in the vicinity of the former CDE facility. This Proposed Plan addresses OU2, contaminated soils and buildings at the former CDE facility. EPA's findings indicate the presence of "principal threat" wastes at the facility, which are also addressed by this Proposed Plan.

Future Proposed Plans will address other contamination problems posed by the site. EPA's remedial investigation of the groundwater and Bound Brook contamination are ongoing and will be addressed in subsequent operable units.

WHAT IS A "PRINCIPAL THREAT"?

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. EPA's August 1990 guidance, entitled: "A Guide on Remedial Actions at Superfund Sites with PCB Contamination", states that principal threats will include soils contaminated at industrial sites at concentrations greater than or equal to 500 ppm total PCBs. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element. In addition, NJDEP has recommended that soils contaminated with VOCs in excess of 1 ppm may also be a source of groundwater contamination, and soils in excess of that criterion are also considered principal threat waste.

SUMMARY OF SITE RISKS

As part of the RI/FS for OU2, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants in soils and buildings on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects caused by hazardous substance release from a site in the absence of any actions or controls to mitigate these under current and future land uses. The industrial park is bounded by residential, commercial, and municipal properties, the Bound Brook, and the Conrail rail line. The industrial park is currently zoned for commercial/industrial use. According to the Borough of South Plainfield, it is anticipated that the future land use for the industrial park will be commercial/industrial.

Human Health Risks

The Baseline Human Health Risk Assessment (BHHRA) focused on current and future health effects to both children and adults in an industrial setting. The most likely current populations at risk of exposure are trespassers and commercial/industrial workers. The industrial scenario, in the absence of institutional controls, included potential trespassing onto the site by children (10 to 18 years) and on-site indoor and outdoor workers. These receptor populations were considered "reasonable maximum exposure," and therefore protective of human health under this land use. Exposures that could result from current and future direct contact with contaminated soil and indoor dust, such as incidental ingestion, dermal contact, and inhalation of contaminants in air, were evaluated in the BHHRA.

There were many chemicals detected in the soils and buildings at the former CDE facility. Some of these chemicals occur as natural components of soil and others are present due to past activities associated with the site. PCBs were identified as a contaminant of concern in previous investigations that started in 1996. "Aroclor" is the trade name given to commercially-manufactured mixtures of PCBs. The different mixtures are identified with a four digit number (e.g., Aroclor-1254). Aroclors were chosen for evaluation because they were used in the former manufacturing processes at the CDE facility and are bioaccumulative and persistent in the environment. The Aroclors detected at the industrial park include Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260. Other contaminants of concern that were identified include, but are not limited to: dioxins, furans, VOCs (such as benzene, 1,1-DCE, PCE, TCE, vinyl chloride), SVOCs (aldrin, dieldrin, 4,4'-DDT, gamma chlordane and heptachlor epoxide), and inorganics (such as arsenic and lead). To determine what chemicals were of concern at the site, each chemical detected was compared against criteria that included potential toxicity and frequency of detection.

For the purpose of the BHHRA, the facility property was divided into two areas, denoted Area A (generally the western part of the property) and Area B (generally the eastern part of the property), reflecting the historical property usage. The data was subsequently subdivided by type: surface soil, all soil (surface soil combined with subsurface soil samples) and building dust samples, resulting in a total of five data sets.

The statistical analysis identified a number of data points that were considered statistical outliers within the data sets. Therefore, for those data sets, a chemical-specific exposure point concentration (EPC) was calculated including the outliers and another EPC was calculated excluding the outliers to provide a range of risks that are discussed in the risk characterization.

EPA's statistical evaluation of the data found that exposure to site-related contaminants was associated with increased excess lifetime cancer risks and non-cancer health hazards, with PCBs as the primary contributor to the risk. This evaluation indicates that there is a potential cancer risk and non-cancer health hazard to current and future trespassers; current and future site workers (indoor and outdoor); and future construction workers from the contaminated soils and building dust. For example, results of the risk assessment indicate that the cancer and non-cancer risk estimates for the trespasser to the eastern portion of the site (including the outliers), identified as Area B in the BHHRA, are 6.0×10^{-2} and 1100, respectively. The cancer and non-cancer risk estimates for the outdoor site worker to the eastern portion of the site (including the outliers), identified as Area B in the BHHRA, are 2.4×10^{-1} and 1700, respectively. The cancer and non-cancer risk estimates for the future construction worker from the contaminated soils in Area B are 3.0×10^{-3} and 3800, respectively. Results of the risk assessment indicate that the cancer risk estimates are within the acceptable risk

WHAT ARE THE "CONTAMINANTS OF CONCERN"?

EPA has identified several contaminants that pose the greatest potential risk to human health at the industrial park. The primary contaminant of concern is polychlorinated biphenyls (PCBs).

PCBs: PCBs is the contaminant that drives the soil and building dust risk. PCBs were detected in surface soils (0 to 2 feet) at the industrial park at a maximum concentration of 51,000 parts per million (ppm) and in the subsurface (2 to 6 feet) at a maximum concentration of 130,000 ppm. PCBs were detected in building dust at a maximum concentration of 8,300 ppm.

PCBs were widely used as a fire preventative and insulator in the manufacture of transformers, capacitors, and other electrical equipment because of their ability to withstand exceptionally high temperatures. The manufacture of PCBs stopped in the United States in 1977.

EPA has determined that PCBs cause cancer in animals and probably cause cancer in humans. Serious non-cancer health effects have been observed in animals exposed to PCBs. Studies of Rhesus monkies exposed to PCBs indicate a reduced ability to fight infection and reduced birth weight in offspring exposed *in utero*.

Other contaminants of concern included PAHs, pesticides, metals and volatile organic compounds. The potential health effects associated with these chemicals, based primarily on animal studies include: neurotoxicity, effects on the liver and other organs such as developmental toxicity, reproductive toxicity, and immunotoxicity.

Below is a list of some of the other contaminants of concern at the industrial park along with their corresponding maximum concentrations:

	Maximum Concentration Detected (ppm)	
Contaminant	Soil	Building
aldrin	1,100	n/a
arsenic	1,060	100
dieldrin	520	n/a
dioxin	0.008	n/a
gamma chlordane	8,200	n/a
heptochlor epoxide	1,200	n/a
4,4'-DDT	25,000	n/a
lead	52,600	61,700
TCE	47	n/a

range for the current and future indoor site worker in Area A (1.2×10^{-5}). However, the non-cancer risk estimate for the current and future site worker is 150. In addition, the cancer risk estimates are within the acceptable risk range for the future construction worker (1.8×10^{-5}) when evaluating exposure to both the surface and subsurface soil without the outliers in Area A. However, the non-cancer risk estimate for the future construction worker when evaluating exposure to both the surface and subsurface soil in Area A is 21. Detailed results of the risk assessment can be found in the RI Report for OU2. A summary of the cancer risks and non-cancer health hazards is provided in Table 1, on page 23, of this plan. These risk estimates are based on current reasonable maximum exposure scenarios and were developed by taking into account various conservative assumptions about the frequency and duration of an individual's exposure to the surface and subsurface soils, building dust, as well as the toxicity of the contaminants of concern.

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the contaminants of concern at the site in various media (i.e., soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil. Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response) are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health effects.

Risk Characterization: This step summarizes and combines exposure information and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk). For non-cancer health effects, a "hazard index" (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding reference doses. The key concept for a non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

Ecological Risks

A four-step process is utilized for assessing site-related ecological risks for a reasonable maximum exposure scenario: *Problem Formulation*—a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. *Exposure Assessment*—a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. *Ecological Effects Assessment*—literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. *Risk Characterization*—measurement or estimation of both current and future adverse effects.

An ecological risk assessment (ERA) was performed at the former CDE facility. The objective of the ERA was to assess potential risks to terrestrial receptors from contaminants found at the site. The ecological assessment consisted of a number of field investigations including a wetland investigation, a terrestrial and aquatic habitat characterization, a wildlife survey, and a floodplain assessment. In addition, an evaluation of documented endangered and threatened species in the vicinity of the former CDE facility was conducted. The ecological risk assessment considered the facility soils as the primary medium of concern. Although no significant habitat for ecological receptors was identified in the developed portion of the facility, the undeveloped portion of the industrial park was deemed as supporting a diverse assemblage of wildlife and as representing significant habitat for ecological receptors. Based on the ERA, ecological receptors associated with the undeveloped areas of the facility property may be at excess risk from site-related contaminants. A detailed discussion of this assessment can be found in the RI Report for OU2. An ERA for the Bound Brook will be conducted as part of the operable unit that includes surface water and associated wetlands.

It is EPA's current judgment that the Preferred Alternatives identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, are necessary to protect human health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

The following remedial action objectives for contaminated soils and buildings address the human health risks and environmental concerns at the former CDE facility:

- Reduce or eliminate exposure to contaminated soils and building material that present an unacceptable risk to human health and the environment;
- Prevent/minimize migration of contamination to the Bound Brook from surface soils; and
- Reduce or eliminate the migration of site contaminants from soil and debris to the groundwater.

In evaluating how best to achieve these RAOs, the planned property redevelopment contemplated by the Borough of South Plainfield is a significant consideration. The Borough of South Plainfield has communicated its intention to pursue the redevelopment of the former CDE facility for commercial/retail uses, and EPA has developed Cleanup Goals that would be protective under a current-use scenario and a redevelopment scenario, but that would not allow for unrestricted use of the property (e.g., residential use would not be contemplated).

EPA's August 1990 guidance entitled "A guide on Remedial Actions at Superfund Sites with PCB contamination" recommends a cleanup goal of 1 ppm for unrestricted land use and a range between 10 - 25 ppm for commercial/industrial properties. For this site, EPA has identified a Cleanup Goal of 10 ppm for PCBs for direct contact with soils. The State of New Jersey has developed State-wide residential direct contact soil cleanup criterion for PCBs of 0.49 ppm and non-residential direct contact soil cleanup criterion for PCBs of 2 ppm for commercial/industrial properties, which are "To Be Considered" criteria.

EPA's 1990 PCB guidance states that principal threats will include contaminated soils at concentrations greater than or equal to 500 ppm PCBs at commercial or industrial sites, and EPA has identified this principal threat Cleanup Goal for soils at the site. New Jersey has also developed impact-to-groundwater cleanup criteria of 1 ppm for VOCs in soils, which EPA has identified as a Cleanup Goal for the site to address soils that may act as a continuing source of ground water contamination.

SUMMARY OF SOIL AND BUILDING REMEDIAL ALTERNATIVES

Medium	Source Control Alternatives	Description
SOIL	S-1	No Action
	S-2	Excavation; Off-Site Disposal with Treatment (if necessary)/Institutional Controls
	S-3	Principal Threat Excavation; Off-Site Disposal with Treatment (if necessary)/Multi-Layer Cap/Institutional Controls
	S-4	Soil Vapor Extraction/Solidification/Multi-Layer Cap/Institutional Controls
	S-5	Low Temperature Thermal Desorption/Multi-Layer Cap/Institutional Controls
BUILDINGS	B-1	No Action
	B-2	Decontamination and Surface Encapsulation/Institutional Controls
	B-3	Demolition/Off-Site Disposal

EPA's April 1998 guidance entitled " Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites" recommends that, for commercial/ industrial exposure scenarios, a range of 5 ppb to 20 ppb (TEQs) should generally be used as a starting point for setting Cleanup Goals for sites with dioxin in surface soil.

While other contaminants, such as arsenic and lead, were identified in the risk assessment as incremental contributors to the direct contact risks posed by the site, EPA has not identified specific Cleanup Goals for these other contaminants because the primary risk driver, PCBs, is ubiquitous across the site, and EPA expects that remedies that adequately address the risks posed by PCBs would also address these other contaminants.

SUMMARY OF REMEDIAL ALTERNATIVES

Remedial Alternatives for OU2 soils and buildings are presented below. CERCLA requires that if a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, EPA must review the action no less often than every five years after initiation of the action. In addition, institutional controls (*e.g.*, a deed notice in the form of an easement or covenant) to limit the use of portions of the property may be required. The type of restriction and enforceability may need to be determined after completion of the remedial alternative selected in the ROD. Consistent with expectations set out in the Superfund regulations, none of the remedies rely exclusively on institutional controls to achieve protectiveness. The time frames below for construction do not include the time for remedial design or the time to procure contracts.

The remedial alternatives evaluated in this Proposed Plan were limited for several reasons. For example, although there exist several different methods to decontaminate PCB-contaminated building surfaces (*i.e.*, vacuum/pressure wash, acid etch, scarification and wipe/solvent wash), these methods were evaluated as a single alternative to allow the parties performing the work the flexibility to select the most appropriate method based on the specific conditions encountered in each of the buildings.

Due to the chemical and physical heterogeneity of the contaminated soil, the alternatives that would permanently address the facility soil are limited. Chemical characteristics of the soil include PCBs, VOCs, SVOCs, and metals. Physical characteristics of the soil include the presence of man-made fill (gravel, cinders, ash, slag) and debris (brick, glass fragments, wood, metal fragments, capacitors). Since principal threat wastes are associated with OU2, treatment of the contaminated soil was considered as a principal element of some of the alternatives.

Common Elements

Some of the structures at the industrial park have the potential to qualify as historic properties because of the activities of the Spicer Manufacturing Corporation. As a result, further investigation must be performed to determine if the on-site structures qualify as historic properties. Since Alternatives B-2 and B-3 would affect the structures, it would be necessary to develop an approach to mitigate the effects of the remedial action. It is expected that such an approach would involve performing additional historical research and recordation of the structures.

Several of the soil alternatives include common components. The industrial park consists of approximately 26 acres. A portion of this area is federally-designated wetlands. EPA is using the 500-year flood line as a natural boundary to determine the extent of soil remediation under this plan. The total impacted area addressed under this Proposed Plan is approximately 20 acres. The remaining six acres of low-lying wetlands will be addressed as part of a subsequent operable unit that addresses the Bound Brook sediments and adjacent wetlands areas. Alternatives S-2 through S-5 require the excavation of the capacitor disposal area and off-site disposal of approximately 7,500 cubic yards of soil and debris found therein (see Figure 3). Although the capacitor disposal area poses a principal threat, treatment of all of the excavated debris was not considered because of the nature of the waste (substantially debris not amenable to treatment). The Toxic Substances Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA) are federal laws that mandate procedures for managing, treating, transporting, storing, and disposing of hazardous substances. The excavated soils and debris with PCB concentrations greater than 50 ppm would be transported to a TSCA landfill. Any other contaminated soils that are transported off-site for disposal would be subject to RCRA disposal regulations.

Since contaminants would remain in soil above EPA's PCB cleanup goal for unrestricted use (1.0 ppm) recommended in EPA's 1990 PCB guidance, as well as the State of New Jersey's most protective soil cleanup criteria for PCBs

(0.49 ppm) and New Jersey's residential direct contact soil cleanup criterion for inorganics, institutional controls would be employed to ensure that any future site activities would be performed with knowledge of the site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property. In addition, since Alternatives S-1 through S-5 result in contaminants remaining on-site above acceptable levels, a review of the site at least every 5 years would be required. The anticipated future uses for the industrial park being considered by the Borough of South Plainfield are consistent with this future-use scenario.

Alternatives S-3 through S-5 require contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs to be capped by use of a multi-layer cap. Soils containing PCBs greater than New Jersey's non-residential direct contact soil cleanup criterion of 2 ppm would be subject to engineering controls. Hardscape (i.e., that part of the site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. Alternative S-2 would also require engineering controls.

Due to the limited dioxin data collected at the site, Alternatives S-2 through S-5 would require additional soil sampling to determine if dioxins and furans would need to be addressed.

Based on the results of the Stage IA Cultural Resource Investigation, the southeastern portion of the site may contain former land surfaces and associated cultural resources that relate to pre-historic and/or early historic time periods. Alternatives S-2 through S-5 may expose or disturb archeological cultural resources that may be eligible for the NRHP. If eligible subsurface archeological sites are discovered within the facility property, and the remedial alternative will affect these significant properties, than an approach, such as data recovery, would be developed to resolve or mitigate the effects of the remedial action.

Because the Borough of South Plainfield's redevelopment plans anticipate commercial reuse of the property, EPA considered the potential for vapor intrusion of VOCs from residual contamination. EPA concluded that vapor intrusion may pose a human health concern under various future-use scenarios. While the remedial alternatives considered in this Proposed Plan would be expected to substantially reduce the potential for vapor intrusion, vapor mitigation systems would need to be evaluated for on-site buildings under each of the remedial alternatives.

SOIL ALTERNATIVES

Alternative S-1: No Action

Estimated Capital Cost: *$0*
Estimated Annual O&M Cost: *$0*
Estimated Present Worth Cost: *$0*
Estimated Construction Time frame: None

Regulations governing the Superfund program generally require that the "no action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the Hamilton Industrial Park to prevent exposure to the soil contamination and the contaminated soil would be left in place. Existing temporary measures (i.e., paving and fencing) would provide limited protectiveness, if maintained. Redevelopment of the industrial park would pose a high risk of direct contact exposure to construction workers and future users, and may exacerbate off-site contaminant migration. Because contaminated soil would be left in place under this alternative, a review of the remedy every five years would be required.

Alternative S-2: Excavation/Off-Site Disposal/ Institutional Controls

Estimated Capital Cost: *$111,000,000*
Estimated Annual O&M Cost: *$124,000*
Estimated Present Worth Cost: *$114,000,000*
Estimated Construction Time frame: 2 years

This alternative consists of the excavation of soils containing PCBs at concentrations greater than 10 ppm and contaminated soils that exceed New Jersey's Impact to Groundwater Soil Cleanup Criteria (IGWSCC) for contaminants other than PCBs. Under this alternative, an estimated 278,500 cubic yards of contaminated soil would be excavated and transported off-site for proper disposal at a RCRA or TSCA-regulated landfill, as appropriate, based on the concentrations of PCBs in the excavated soils. This would include an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas that would be excavated and transported off-site for disposal (see Figure 4). If necessary, in order to meet the requirements of the disposal facilities, treatment of the soil may be needed using a range of the technologies identified in the Feasibility Study prior to land disposal.

Post-excavation sampling would be performed to confirm that the specified cleanup levels have been achieved. Any cleanup level exceedances detected during the post-excavation confirmatory sampling would result in additional excavation, treatment (if necessary), and off-site disposal. Once excavation activities have been completed, the excavations would be backfilled with clean soil or non-contaminated on-site soils that were excavated (i.e., soils excavated to reach contaminated soils at depth) and the surface would be paved and/or vegetated based on the planned future uses.

Alternative S-2 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future site activities would be performed with knowledge of the site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Alternative S-3: "Principal Threat" Excavation; Off-Site Disposal/Multi-Layer Cap/ Institutional Controls

Estimated Capital Cost:	*$58,000,000*
Estimated Annual O & M Cost:	*$560,000*
Estimated Present Worth Cost:	*$72,000,000*
Estimated Construction Time frame:	*1 to 2 years*

This alternative consists of the excavation of soils containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed New Jersey's IGWSCC for contaminants other than PCBs. Under this alternative, an estimated 114,500 cubic yards of contaminated soil would be excavated and transported off-site for proper disposal at a TSCA-regulated landfill (see Figure 5). This amount would include an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas that would be excavated and transported off-site for disposal. If necessary, in order to meet the requirements of the disposal facilities, treatment of the soil may be needed using a range of the technologies identified in the Feasibility Study prior to land disposal.

Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped by use of a multi-layer cap. Soils containing PCBs greater than New Jersey's non-residential direct contact soil cleanup criterion of 2 ppm would be subject to engineering controls. Hardscape (i.e., that part of the site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. The total area to be capped would be approximately 20 acres.

In some instances, contaminated soil may be re-used on-site. For example, soil with contaminant concentrations below the specified cleanup levels that is excavated to reach more contaminated soil at depth may be able to be reused as fill under the multi-layer cap.

Alternative S-3 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future site activities would be performed with knowledge of the site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Alternative S-4: Soil Vapor Extraction/Solidification/ Multi-Layer Cap/Institutional Controls

Estimated Capital Cost:	*$25,000,000*
Estimated Annual SVE Operating Cost (4 years):	*$330,000*
Estimated Annual O & M Cost (30 years):	*$440,000*
Estimated Present Worth Cost:	*$36,000,000*
Estimated Construction Time frame:	*2 to 3 years*

This alternative consists of a combination of technologies to address the contaminated soils at the former CDE facility. In order to address volatile organic compounds (VOCs) above IGWSCC, this alternative includes installation of a soil vapor extraction (SVE) system. In addition, this alternative includes the solidification of soils with PCBs at concentrations greater than 500 ppm. Approximately 107,000 cubic yards of soil would be solidified. This alternative also includes the excavation of the capacitor disposal area and off-site disposal of approximately 7,500 cubic yards of soil and debris found therein. If necessary, in order to meet the requirements of the disposal facilities, treatment of the soil may be needed using a range of the technologies identified in the Feasibility Study prior to land disposal.

Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped by use of a multi-layer cap. Soils containing PCBs greater than New Jersey's non-residential direct contact soil cleanup criterion of 2 ppm would be subject to engineering controls. Hardscape (i.e., that part of the site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. The total area to be capped would be approximately 20 acres.

Alternative S-4 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future site activities would be performed with knowledge of the site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

Alternative S-5: Low Temperature Thermal Desorption/Multi-Layer Cap/ Institutional Controls

Estimated Capital Cost:	*$40,000,000*
Estimated Annual LTTD Operating Cost (4 to 5 years):	*$640,000*
Estimated Annual O & M Cost: (30 years)	*$440,000*
Estimated Present Worth Cost:	*$52,000,000*
Estimated Construction Time frame:	*5 to 7 years*

This alternative consists of the thermal desorption of approximately 107,000 cubic yards of soil containing PCBs at concentrations greater than 500 ppm and contaminated soils that exceed IGWSCC for contaminants other than PCBs. This alternative would require the construction and operation of a Low Temperature Thermal Desorption (LTTD) unit at the site. LTTD is a physical separation process, whereby contaminants are typically destroyed in a combustion chamber and the off-gas is treated. Under this alternative, contaminated soils would be treated on site. The excavated areas would be backfilled with the treated soils. In addition, an estimated 7,500 cubic yards of contaminated soil and debris from the capacitor disposal areas would be excavated and transported off-site for disposal.

For cost-estimation purposes, the FS assumed that all of the 107,000 cubic yards of soil would be amenable to on-site treatment; however, several factors may limit the ability of an on-site LTTD unit to accommodate this entire volume. The capacitor disposal areas have already been excluded from the treatable soil volume in this Alternative, but other soil handling factors additional debris, mixed PCB and VOC contamination) may preclude the cost-effective treatment of some soil. Also, the PCB contaminant levels vary widely across the site, and the most highly-contaminated soils may not be effectively treated with an on-site unit. Off-site disposal would be required for these soils that are not amenable to treatment. Contaminated soils containing less than 500 ppm, but greater than 10 ppm PCBs, would be capped by use of a multi-layer cap. Soils containing PCBs greater than New Jersey's non-residential direct contact soil cleanup criterion of 2 ppm would be subject to engineering controls. Hardscape (i.e., that part of the site consisting of structures, parking areas and walkways, made with hard materials) could be used in place of capping. The total area to be capped is approximately 20 acres.

Alternative S-5 would result in soil contaminated with PCBs remaining on-site at levels that would not allow for unrestricted use. Therefore, engineering and institutional controls would be employed to ensure that any future site activities would be performed with knowledge of the site conditions and implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

BUILDING ALTERNATIVES

Alternative B-1: No Action

Estimated Capital Cost:	*$0*
Estimated Annual O&M Cost:	*$0*
Estimated Present Worth Cost:	*$0*
Estimated Construction Time frame:	*None*

Regulations governing the Superfund program generally require that the "no action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the 18 buildings located at the Hamilton Industrial Park to prevent exposure to the contaminated structures. Because contaminated buildings would be left in place under this alternative, a review of the remedy every five years would be required.

Alternative B-2: Decontamination and Surface Encapsulation/Institutional Controls

Estimated Capital Cost:	*$12,000,000*
Estimated Annual O&M Cost:	*$220,000*
Estimated Present Worth Cost:	*$18,000,000*
Estimated Construction Time frame:	*1 to 2 years*

In this alternative, surface decontamination would be combined with surface encapsulation and institutional controls. Decontamination involves the removal of surface contamination from surfaces up to several centimeters in depth depending on the method used (*i.e.*, vacuum/pressure wash, acid etch, scarification and wipe/solvent wash). In many cases, extensive decontamination would be required to render buildings acceptable for future use. Surface encapsulation (e.g., epoxy coating) allows PCB-contaminated porous surfaces to be managed in place while the buildings remain in service, provided that the buildings are surface washed, encapsulated, and marked to indicate the presence of PCBs.

This alternative would also include long-term sampling and monitoring to assess any changes in site conditions. Five-year reviews, as required by CERCLA, would also be performed to assess the need for future remedial actions. Public awareness programs would be implemented to inform the public and local officials about potential hazards posed by exposure to the contaminated buildings materials. In addition, institutional controls would be employed to ensure that any future site activities would be performed with knowledge of the site conditions and implementation of appropriate health and safety controls, and that the buildings would not be used for any purposes that would be inconsistent with the continued presence of PCBs within the building materials, such as residential use. These institutional controls would likely include: 1) an informational notice concerning the site conditions; and 2) a legal restriction on the future use of the facility property.

In order to implement this alternative, some or all of the tenants at the Hamilton Industrial Park would need to be relocated pursuant to the Uniform Relocation Act.

Alternative B-3: Demolition/Off-Site Disposal

Estimated Capital Cost:	*$7,000,000*
Estimated Annual O&M Cost:	*$0*
Estimated Present Worth Cost:	*$7,000,000*
Estimated Construction Time frame:	*1 to 2 years*

This alternative consists of the demolition of the 18 buildings located at the Hamilton Industrial Park. Approximately 22,000 tons of debris would be transported off-site for proper disposal. Since the debris would be disposed of off-site, it is anticipated that there would be no need for institutional controls, no five-year review requirement, and no long-term monitoring requirement in connection with the building structures. Five-year reviews of the site itself would still be necessary.

Debris designated for off-site disposal would be subjected to analysis for disposal parameters and transported off-site

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that are legally applicable, or relevant and appropriate to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.
Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

for treatment (as necessary) and disposal in accordance with applicable regulations. During the remedial design, decontamination prior to demolition could be considered to reduce the quantity of hazardous waste. Non-contaminated building debris could be recycled and could be reused on site.

In order to implement this alternative, some or all of the tenants at the Hamilton Industrial Park would need to be relocated pursuant to the Uniform Relocation Act.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select an alternative. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. The "Detailed Analysis of Alternatives" can be found in the FS.

1. Overall Protection of Human Health and the Environment

Soils

All of the alternatives except Alterna ive S-1 (no action) would provide adequate protection of human health and the environment by eliminating, reduc ng, or controlling risk through off-site disposal/treatmen , engineering controls, and/or institutional controls.

Alternative S-2 (excavation and off-site lisposal) would remove soil with PCB concentrations ab ve the Cleanup Goal of 10 ppm and, therefore, would pr tect both human and environmental receptors from contac with contaminants in the soil.

Alternatives S-2, S-3, and S-5 would achi ve the RAOs at the completion of construction. Howeve , RAOs would be achieved in Alternative S-4, appr ximately 4 years after the completion of construction.

There would be no local human health or en ironmental impacts associated with off-site disposal bec use the contaminants would be removed from the sit to a secure location. Alternative S-2 would eliminate th actual or potential exposure of property owners/occup nts to contaminated soils.

Alternatives S-3 through S-5 would mitigate the potential human health and ecological risks associated with exposure to contaminated soils through the placement of a multi-layer cap and/or hardscape, and through institutional controls such as land-use restrictions, and public education. However, the contaminated soils would remain in place at the site. The protection would persist only as long as the cap was actively maintained, since contaminants would remain, and a breach of the cap could re-establish human and/or ecological exposure routes.

Buildings

All of the alternatives except Alternative B-1 (no action) would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through off-site disposal/treatment, engineering controls, and/or institutional controls. In addition, additional migration of contaminants could occur over time under Alternative B-1 as a result of disturbance by humans and natural processes. Alternative B-2 (decontamination and surface encapsulation) would provide some protection to the tenants/occupants at the industrial park from future exposure to contaminated buildings through sealing the contaminated surfaces with an epoxy paint, and through institutional controls such as use restrictions and public education. However, contaminated building materials would remain in place. The protection would persist only as long as the containment measures were actively maintained, since contaminants would remain on-site, and a breach of containment measures could re-establish exposure routes. Alternative B-3 (demolition and off-site disposal) would remove contaminated buildings and, therefore, would protect both human and environmental receptors from contact with contaminants.

There would be no local human health or environmental impacts associated with off-site disposal because the contaminants would be removed from the site to a secure location. Alternative B-3 would eliminate the actual or potential human exposure to the contaminated structures.

2. Compliance with ARARs

Soils

Actions taken at any Superfund site must meet all legally applicable or relevant and appropriate requirements (ARARs) of federal and state environmental or facility siting laws or provide grounds for invoking a waiver of these requirements. There are no chemical-specific ARARs for the contaminated soils. EPA's August 1990 PCB guidance recommends a cleanup goal of 1 ppm for unrestricted land use and a range between 10 - 25 ppm for commercial/industrial properties. The State of New Jersey has developed State-wide residential direct contact soil cleanup criteria for PCBs of 0.49 ppm and non-residential direct contact soil cleanup criteria for PCBs of 2 ppm for commercial/industrial properties, which are "To Be Considered" criteria. Alternatives S-2 through S-5 would provide adequate protection consistent with these guidelines.

As discussed below, EPA has promulgated requirements for the management of PCB wastes as directed by the Toxic Substances Control Act (TSCA), and these requirements would be relevant and appropriate to the management of PCB contamination at this site. These requirements provide a risk-based approach for managing PCB wastes. Alternatives S-2 through S-5 would satisfy these TSCA-requirements.

Alternatives S-2 through S-5 would require the implementation of measures to protect wetlands and endangered species, in accordance with federal and state ARARs, such as the "Protection of Wetlands Executive Order," "Wetlands Protection at Superfund Sites," the "Wetlands Act of 1970," the "Freshwater Wetlands Protection Act Rules," the "Endangered Species Act," etc.

Subsurface areas in the southeastern portion of the site may contain former land surfaces and associated cultural resources that relate to pre-historic and/or early historic time periods. Therefore, Alternatives S-2 through S-5 may expose or disturb archeological cultural resources that may be eligible to the NRHP. If subsurface archeological sites are discovered within the facility property and determined to be eligible to the NRHP under Criterion D (properties that have yielded or may be likely to yield information important in prehistory or history), and if the project would affect these significant properties, then it would be necessary to develop an approach to resolve or mitigate the effects of the remedial action, such as data recovery.

RCRA and TSCA are federal laws that mandate procedures for managing, treating, transporting, storing, and disposing of hazardous substances. All portions of RCRA that are applicable or relevant and appropriate to the proposed remedy for the site would be met by Alternatives S-1 through S-5 and all portions of TSCA would be met by Alternatives S-2 through S-5.

Buildings

The No Action Alternative will not satisfy contaminant-specific and action-specific ARARs. No location-specific ARARs would be triggered by the No Action alternative.

Alternatives B-2 and B-3 would prevent direct contact with contaminated surfaces in excess of the Cleanup Goals and would comply with all ARARs. TSCA is an ARAR. Alternative B-2 would comply with 40 CFR 761.30(p), regarding the use of PCB contaminated surfaces. Under Alternative B-3, PCB-contaminated building materials would be remediated consistent with 40 CFR 761.79. RCRA is a federal law that mandates procedures for managing, treating, transporting, storing, and disposing of hazardous substances. All portions of RCRA that are applicable or relevant and appropriate would be met by Alternatives B-1 through B-3.

Some of the structures at the industrial park have the potential to qualify as historic properties because of the activities of the Spicer Manufacturing Corporation. As a result, further investigation must be performed to determine if the on-site structures qualify as historic properties. Since Alternatives B-2 and B-3 would affect the structures, under either of these alternatives it would be necessary to develop an approach to mitigate the effects of the remedial action. It is expected that such an approach would involve performing additional historical research and recordation of the structures.

3. **Long-term Effectiveness and Permanence**

Soils

Alternative S-1 (no action) provides no reduction in risk. Alternative S-2 would be most effective and permanent, as long-term risks would be greatly reduced, since contaminated soils would be permanently removed. Alternative S-3 would reduce long-term risks, since highly contaminated soils (principal threat wastes) would be removed. Off-site treatment/disposal of the contaminated soil at a secure, permitted hazardous waste facility is reliable because the design of such facilities includes safeguards intended to ensure the reliability of the technology and the security of the waste material. Like Alternative S-2, Alternative S-3 relies on institutional controls to reduce future health risks to property owners/occupants associated with exposure to contaminated soils.

Alternatives S-2, S-3, and S-5 are more protective over the long-term than S-4 because they remove and treat the principal threat waste, whereas Alternative S-4 would only immobilize the principal threat waste on site and rely on institutional controls to reduce future health risks to property owners/occupants associated with exposure to highly-contaminated soils.

Buildings

Alternative B-1 (no action) provides no reduction in risk. Alternative B-2 would not be permanent or as effective over the long term as Alternative B-3, since the sealant will degrade over time, requiring maintenance, and deed restrictions may not reliably reduce future risks to property owners/occupants associated with exposure to contaminated surfaces. In contrast, under Alternative B-3, long-term risks would be eliminated, since contaminated buildings would be permanently removed. Off-site treatment/disposal of the contaminated building debris at a secure, permitted hazardous waste facility is reliable because the design of such facilities includes safeguards intended to ensure the reliability of the technology and the security of the waste material.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment

Soils

Alternative S-1 (no action) would not achieve any reduction in the toxicity, mobility, or volume of contaminated soil, since the soil would remain in place.

Alternative S-2 (excavation w/off-site disposal) would reduce contaminant mobility through removal and disposal of the soils at an approved off-site facility. Furthermore, off-site treatment, when required, would reduce the toxicity and volume of the contaminated soils and debris prior to land disposal. Soils with PCB concentrations less than 50 ppm would be excavated and transported to a RCRA landfill permitted to accept low levels of PCB waste. Soils with PCB concentrations greater than 50 ppm would be excavated and transported to a TSCA landfill. It is anticipated that hazardous material would not be destroyed under Alternatives S-2 through S-4, unless the disposal facility required treatment prior to landfilling.

Alternative S-3 would reduce contaminant mobility through removal and disposal of the soils at an approved off-site facility. Furthermore, off-site treatment, when required, would reduce the toxicity and volume of the contaminated soils and debris prior to land disposal.

Alternative S-4 would result in a reduction of contaminant toxicity, mobility, and volume through treatment by the SVE system and excavation of the capacitor disposal areas. Alternative S-4 would also result in a reduction of mobility, but an increase in volume through solidification. Due to uncertainties associated with the implementability of this alternative (discussed in more detail, below), and the fact that nearly all the contaminated soil would remain on site, Alternative S-4 was considered the least effective at satisfying this criterion over the long term, when compared to the other active remedial alternatives.

Alternative S-5 would be most effective in satisfying this criterion, as soils that undergo thermal desorption would exhibit a significant reduction in contaminant toxicity, mobility, and volume.

Alternatives S-3 through S-5 would reduce residual contaminant mobility further, via infiltration or erosion, through capping.

Buildings

Alternative B-1 (no action) would not achieve any reduction in the toxicity, mobility, or volume of contaminated building material.

Alternative B-2 (surface decontamination and encapsulation) would result in a reduction of mobility (through encapsulation), but no substantial reduction of toxicity or volume of contaminants.

Alternative B-3 (demolition w/off-site disposal) would reduce contaminant mobility through removal and disposal of the building debris at an approved off-site facility. Furthermore, off-site treatment, when required, would reduce the toxicity and volume of the contaminated building debris prior to land disposal.

5. Short-term Effectiveness

Soils

No short-term adverse impacts to the community would be expected for Alternative S-1 (no action).

Alternatives S-2 through S-5 present short-term risk because of the potential for exposure associated with excavation and transportation of contaminated soils. Alternative S-2 presents the highest short-term risk because it would require the excavation and transportation off-site of the largest volume of contaminated soils. Alternatives S-4 and S-5 present a higher short-term risk than Alternative S-3 because of the greater potential for exposure associated with treating soils on site. Alternative S-5 would result in relatively higher air emissions than the other alternatives.

Alternatives S-2 through S-5 would cause an increase in truck traffic, noise and potentially dust in the surrounding community, as well as potential impacts to workers during the performance of the work. These potential impacts would be created through construction activities and exposure to the contaminated soil being excavated and handled. However, proven procedures including engineering controls, personnel protective equipment and safe work practices would be used to address potential impacts to workers and the community. For example, under Alternatives S-2 through S-5, the work would be scheduled to coincide with normal working hours (e.g., 8 a.m. to 5 p.m. on week days and no work on weekends or holidays). On-site treatment using an LTTD system typically requires 24 hours of operation to achieve maximum efficiency, so use of daily time constraints would reduce the effectiveness of this technology. However, operation of an on-site LTTD system immediately adjacent to a residential community would generate noise and some disturbance to the community, so restrictions would be necessary.

Trucking routes with the least disruption to the surrounding community would be utilized. Appropriate transportation safety measures would be required during the shipping of the contaminated soil to the off-site disposal facility.

No short-term environmental impacts would be expected from Alternative S-1. The risk of release during implementation of Alternatives S-2 through S-5 is principally limited to wind-blown soil transport or surface water runoff. Any potential environmental impacts associated with dust and runoff would be minimized with proper installation and implementation of dust and erosion control measures and by performing the excavation and off-site disposal with appropriate health and safety measures to limit the amount of material that may migrate to a potential receptor.

The time required for implementation of Alternative S-2 is estimated at 2 years. Alternative S-3 is estimated to take 1 to 2 years. Alternative S-4 is estimated to take 2 to 3 years, and Alternative S-5 is estimated to take about 5 to 7 years to implement. The time frame for Alternative S-4 assumes concurrent implementation of the SVE and solidification treatment technologies; however, the SVE treatment may need to be completed before solidification can be undertaken on portions of the site, extending the time frame for this alternative to as much as 6 to 8 years. Based upon EPA's understanding of the proposed redevelopment plans, the time required to implement Alternatives S-4 and S-5 may interfere with the timely redevelopment of the industrial park.

Buildings

No short-term adverse impacts to the community would be expected for Alternative B-1 (no action).

Alternatives B-2 and B-3 pose short term-term risks based upon the potential for exposure to contaminated building material and transportation of contaminated building debris.

Alternative B-3 would pose the greatest short-term risks, as it would also cause an increase in truck traffic, noise and potentially dust in the surrounding community, as well as potential impacts to workers during the performance of the work. These potential impacts would be created through construction activities and exposure to the contaminated buildings being demolished and handled. However, proven procedures including engineering controls, personnel protective equipment and safe work practices would be used to address potential impacts to workers and the community.

No short-term environmental impacts would be expected from Alternative B-1. The risk of release during implementation of Alternatives B-2 and B-3 is principally limited to wind-blown dust transport and surface water runoff for Alternative B-3. Any potential environmental impacts associated with dust and runoff would be minimized with proper installation and implementation of dust and erosion control measures and by performing decontamination and demolition with appropriate health and safety measures to limit the amount of material that may migrate to a potential receptor.

The time required for implementation of Alternatives B-2 and B-3 is estimated at one to two years.

6. **Implementability**

Soils

No technical implementability concerns exist for Alternatives S-2 and S-3. All technical components of these alternatives would be easily implemented using conventional construction equipment and materials. Because of the heterogeneity of the contaminants and debris in the soil, Alternative S-4 would require treatability studies during remedial design, evaluating how best to implement the SVE system to remove the VOCs, and the solidification of the PCBs. Even after treatability studies to determine the appropriate injection points, solidification agents, dosage rates, and other performance parameters, the uncertainties regarding the implementability of Alternative S-4 would still be highest among all the alternatives considered.

Operation of an on-site LTTD system adjacent to a residential community would generate noise and some disturbance to the community. At other sites where EPA has sited temporary treatment units in or near residential communities, the level of community resistance to the project varies. Based upon EPA's community outreach efforts in South Plainfield, EPA expects residents adjacent to the CDE facility may be unreceptive to Alternative S-5.

The detailed description of Alternative S-5 earlier in this Proposed Plan identified a number of uncertainties associated with this alternative. For cost estimation purposes, it was assumed that all the soil could be successfully treated using a mobile LTTD unit; however, soil mixed with debris, soil handling concerns and high PCB concentrations that would result in very long residence times may limit the implementability of this treatment method.

The personnel required to operate the heavy equipment would require appropriate Occupational Safety and Health Administration (OSHA) certifications (e.g., hazardous waste worker), as well as certification in the operation of heavy equipment. Such individuals are readily available. Off-site hazardous and non-hazardous treatment/disposal facilities for the disposal of the contaminated soil are available and would be feasible.

Buildings

No technical implementability concerns exist for any of the building alternatives. All technical components of Alternatives B-2 and B-3 would be easily implemented using conventional construction equipment and materials. Off-site hazardous and non-hazardous treatment/disposal facilities for the disposal of the contaminated building debris are available and would be feasible.

7. **Cost**

Soils

The estimated present worth cost of each of the soil alternatives is:

Alternative	Present Worth Cost
S-1 (No Action)	$0
S-2 (Excavation/Off-Site Disposal/ Institutional Controls)	$114 million
S-3 (Principal Threat Excavation/ Off-Site Disposal/Multi-Layer Cap/ Institutional Controls)	$72 million
S-4 (SVE/Solidification/Multi-Layer Cap/ Institutional Controls)	$36 million
S-5 (Low Temperature Thermal Desorption/ Multi-Layer Cap/Institutional Controls)	$52 million

Buildings

The estimated present worth cost of Alternative B-1 (No Action) is $0. Alternative B-2 (Decontamination and Surface Encapsulation/Institutional Controls) has an estimated present worth cost of $18,000,000 and Alternative B-3 (Demolition/Off-Site Disposal) has a present worth cost of $7,000,000.

8. **State/Support Agency Acceptance**

The State of New Jersey is still evaluating EPA's preferred alternative in this Proposed Plan.

9. **Community Acceptance**

Community acceptance of the preferred alternatives will be evaluated after the public comment period ends and will be described in the Record of Decision, the document that formalizes the selection of the remedy, for the site.

SUMMARY OF THE PREFERRED ALTERNATIVE

The preferred alternative for the soil component of the remedy for OU2 is a combination of Alternative S-3

(Principal Threat Excavation; Off-Site Disposal/Multi-Layer Cap/Institutional Controls), and Alternative S-5 (LTTD; Multi-Layer Cap/Institutional Controls), hereafter referred to as the Preferred Alternative. Alternatives S-3 and S-5 have many common elements, and differ only in how they address contaminated soils containing PCBs at concentrations greater than 500 ppm and other contaminants that may act as a continuing source of groundwater contamination. EPA concluded that neither S-3 nor S-5 alone would provide sufficient flexibility during remedial action to address this very complex site, but that a combination of the two alternatives would be successful. For example, the FS assumed that 100 percent of the soils to be excavated under Alternative S-5 could be successfully treated using LTTD, whereas several factors are likely to make treatment of a large quantity of soil impracticable. These factors include soils handling issues related to levels of debris found in the soil, the high PCB concentrations that may require very long residence times, or repeated passes through the LTTD unit, and the high VOC concentrations in some soils that may result in vapor releases during soils handling in preparation for the LTTD unit. These are examples where Alternative S-3 (off-site disposal) would be more appropriate.

As noted in the Short-Term Effectivene.:s section of this Proposed Plan, the time frame associatec' with implementing Alternative S-5 (up to 5 to ? years) does not fit well with the proposed redevelopm nt plans for the Industrial Park; EPA expects that the Pref rred Alternative would be performed in 2 to 3 y ars, closer to the time frame expected for Alternative S-3 The estimated present worth cost of EPA's Prefe red Alternative is $62 million, assuming half the 107,000 cubic yards of soil could be addressed throu h LTTD and placed back on site, and the remainder would be sent off site for disposal. Even if only a limited quan ty of soils can be treated using LTTD, this S-3/S-5 hybr d alternative also satisfies another of EPA's ma dates under the Superfund program, to treat princip threat wastes to the maximum extent practicable.

The Preferred Alternative also includes the exca vation and off-site disposal of 7,500 cubic yards of soi and debris in the capacitor disposal area. During th remedial design, additional sampling would be conducted o further delineate the areas requiring excavation. Contan inated soils containing less than 500 ppm, but greater th an 10 ppm PCBs (and other soils with inorganic contaminants) would be capped by use of a multi-layer cap and/or hardscape. Soils containing PCBs greater than 2 ppm would be subject to engineering controls.

Since the Preferred Alternative would result in contaminated soil remaining on site, institutional controls would be employed to ensure that any future site activities are performed with knowledge of the site conditions including the implementation of appropriate health and safety controls, and to prohibit future unrestricted use of the property.

The Preferred Alternative for the building component of the remedy is Alternative B-3 (Demolition/Off-Site Disposal). The Preferred Alternative consists of the demolition of the on-site buildings, resulting in approximately 22,000 tons of debris that would be transported off-site for proper disposal. Certain buildings would need to be demolished as part of the proposed soil remedy; and an expected redevelopment of the industrial park anticipates demolition of all the existing structures. However, because it is possible that not all of the structures will have to be demolished, the Preferred Alternative for the buildings includes a contingency remedy that would allow for the decontamination and surface encapsulation of certain buildings that may not need to be demolished for the other reasons cited above. The contingency remedy would require institutional controls to be employed to ensure that any future site activities are performed with knowledge of the site conditions including the implementation of appropriate health and safety controls, and that the buildings would not be used for any purposes that would not be inconsistent with the continued presence of PCBs within the building materials.

The Preferred Alternatives were selected over other alternatives because they are expected to achieve substantial and long-term risk reduction through off-site disposal, and are expected to allow the property to be used for the reasonably-anticipated future land use, which is commercial/industrial. The implementation of Alternative B-2, as a contingency remedy for certain buildings that do not need to be demolished, would achieve the RAOs, while allowing the property owner(s) and/or the parties performing the work to determine the ultimate fate of the buildings. The Preferred Alternatives reduce the risk within a reasonable time frame, at comparable cost to the other alternatives, and provide for long-term reliability of the remedy. Based on the information available at this time, EPA and the State of New Jersey believe the Preferred Alternatives would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. Because the Preferred Alternative for soils would treat a significant portion of source material constituting principal threats, the Preferred Alternative would meet the statutory preference for the selection of a remedy that involves treatment as a principal element. The selected alternatives can change in response to public comment or new information.

COMMUNITY PARTICIPATION

EPA and the State of New Jersey provide information regarding the cleanup of the CDE site to the public through public meetings, the Administrative Record file for the site, and announcements published in the Courier News newspaper. EPA and the State encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there. The dates for the public comment period, the date, location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan. EPA Region 2 has designated a point-of-contact for community concerns and questions about the Superfund program. To support this effort, the Agency has established a 24-hour, toll-free number the public can call to request information, express concerns or register complaints about Superfund. The Public Liaison Manager for EPA's Region 2 office is:

George H. Zachos
Toll-free (888) 283-7626
(732) 321-6621

U.S. EPA Region 2
2890 Woodbridge Avenues, MS-211
Edison, New Jersey 08837

For further information on the CDE site, please contact:

Peter Mannino
Remedial Project Manager
(212) 637-4395

Pat Seppi
Community Relations Coordinator
(212) 637-3679

U.S. EPA
290 Broadway 19th Floor
New York, New York 10007-1866

Table [illegible]sults of Human Health Baseline Risk Assessment

Scenario Time frame	Medium	Exposure Point	Receptor Population	Area	Total Cancer Risk	Non-Cancer Hazard Index
CURRENT	SURFACE SOIL	SURFACE SOIL	TRESPASSER	Area A	1.4E-004	22
				Area B	3.6E-003(1)	560
					6.0E-002	
					4.4E-004*	35*
			SITE WORKER (OUTDOOR)	Area A	5.6E-004	33
				Area B	1.4E-002(1)	820
					2.4E-001	
					1.7E-003*	52*
CURRENT/ FUTURE	BUILDING DUST	BUILDING INTERIOR (Dust and Indoor Air)	SITE WORKER (INDOOR)	Area A	1.2E-005	150
				Area B	1.0E-003	150
FUTURE	SITE SOILS	SURFACE AND SUBSURFACE SOIL	TRESPASSER	Area A	6.2E-005	11
					4.7E-005*	6.1*
				Area B	7.1E-003(1)	1100
					6.0E-002	
					9.0E-004*	140*
			SITE WORKER (OUTDOOR)	Area A	2.5E-004	17
					1.8E-004*	9*
				Area B	2.9E-002(1)	1700
					2.4E-001	
					3.5E-003*	200
			CONSTRUCTION WORKER	Area A	2.4E-005	38
					1.8E-005*	21
				Area B	3.0E-003(1)	3800
					2.8E-002	
					3.5E-004*	460

(1) Risks associated with dioxin-like PCBs and non-dioxin like PCBs are not included in this total. Instead, these are shown in the subsequent line. These are not evaluated for non-cancer effects.

* Reasonable Maximum Exposure (RME) calculated without outliers

500258

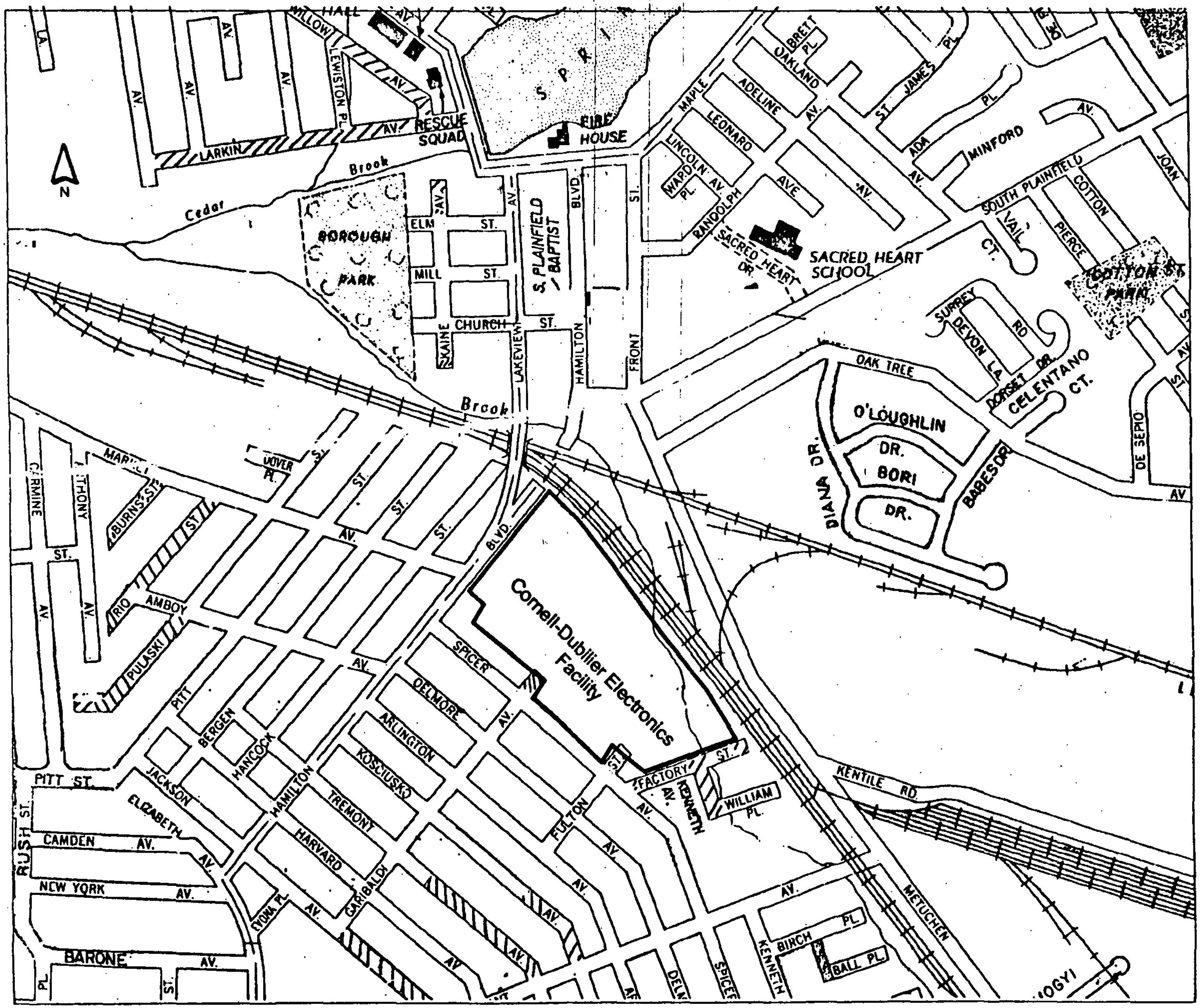

Figure 1
Cornell-Dubilier Electronics Superfund site
Site Location Map

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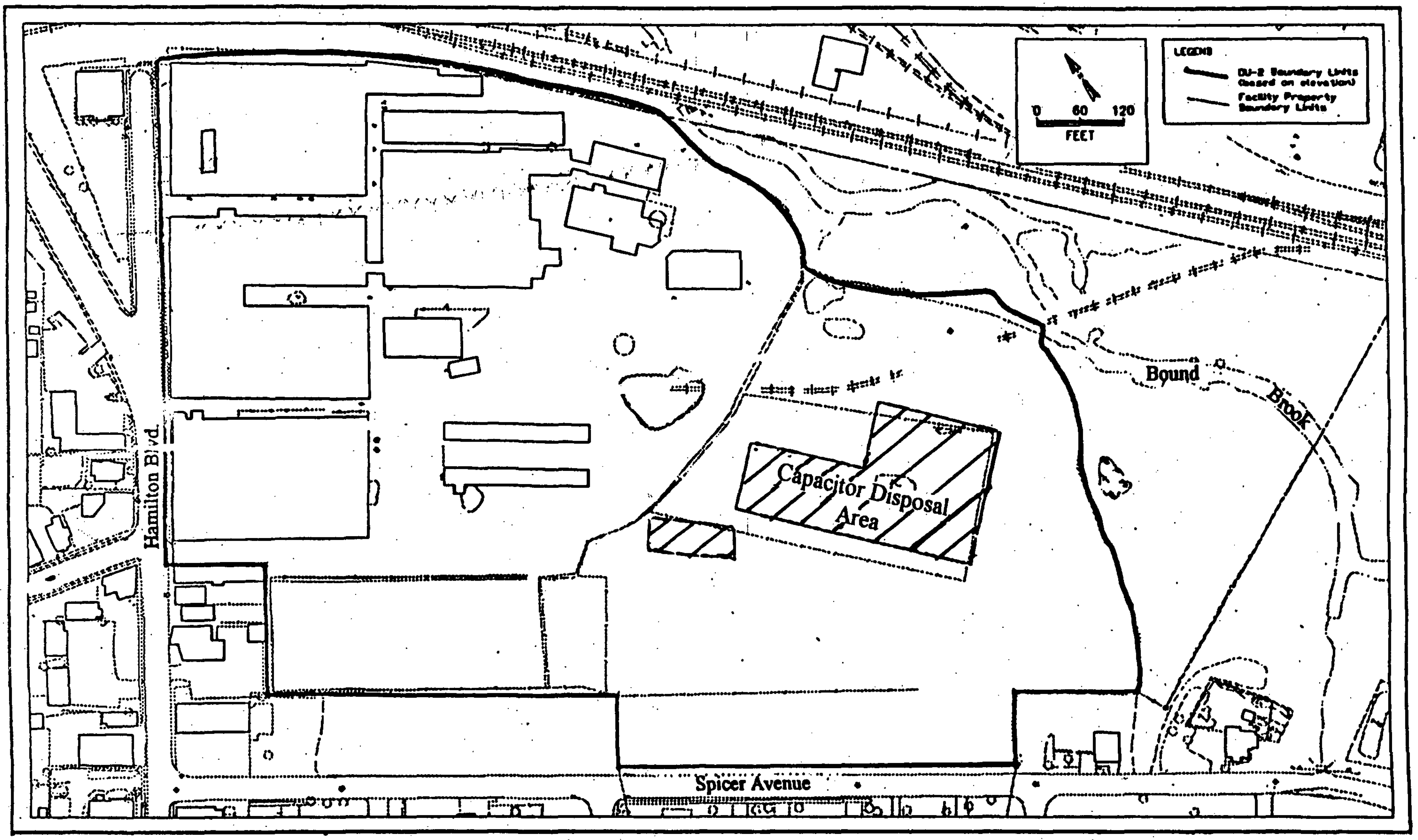

Figure 3
Cornell-Dubilier Electronics Superfund Site
Operable Unit 2 - Facility Soils and Buildings

500260

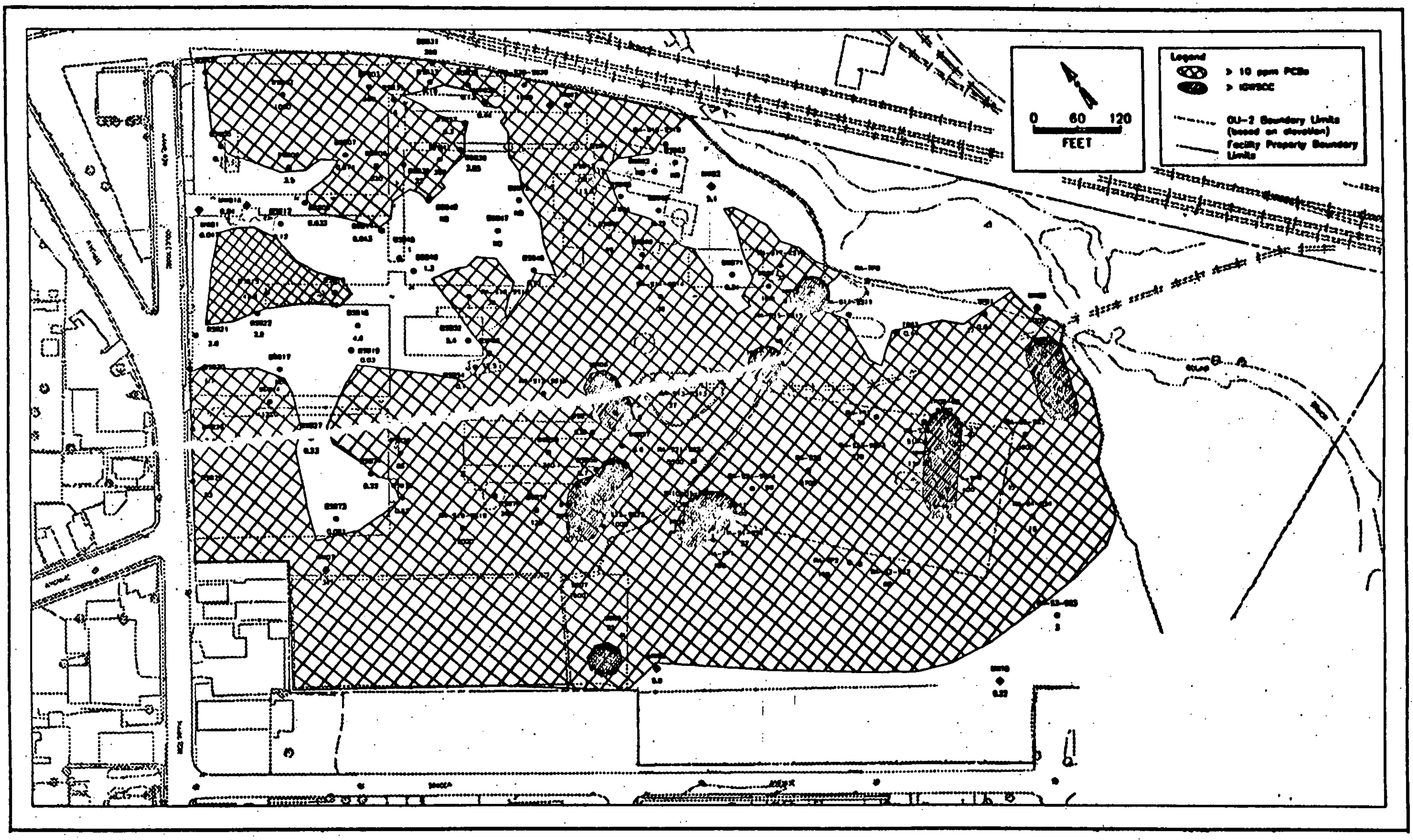

Figure 4
Cornell-Dubilier Electronics Superfund site - Operable Unit 2
Extent of PCB contamination greater than 10 ppm and other COPCs greater than IGWSCC

500261

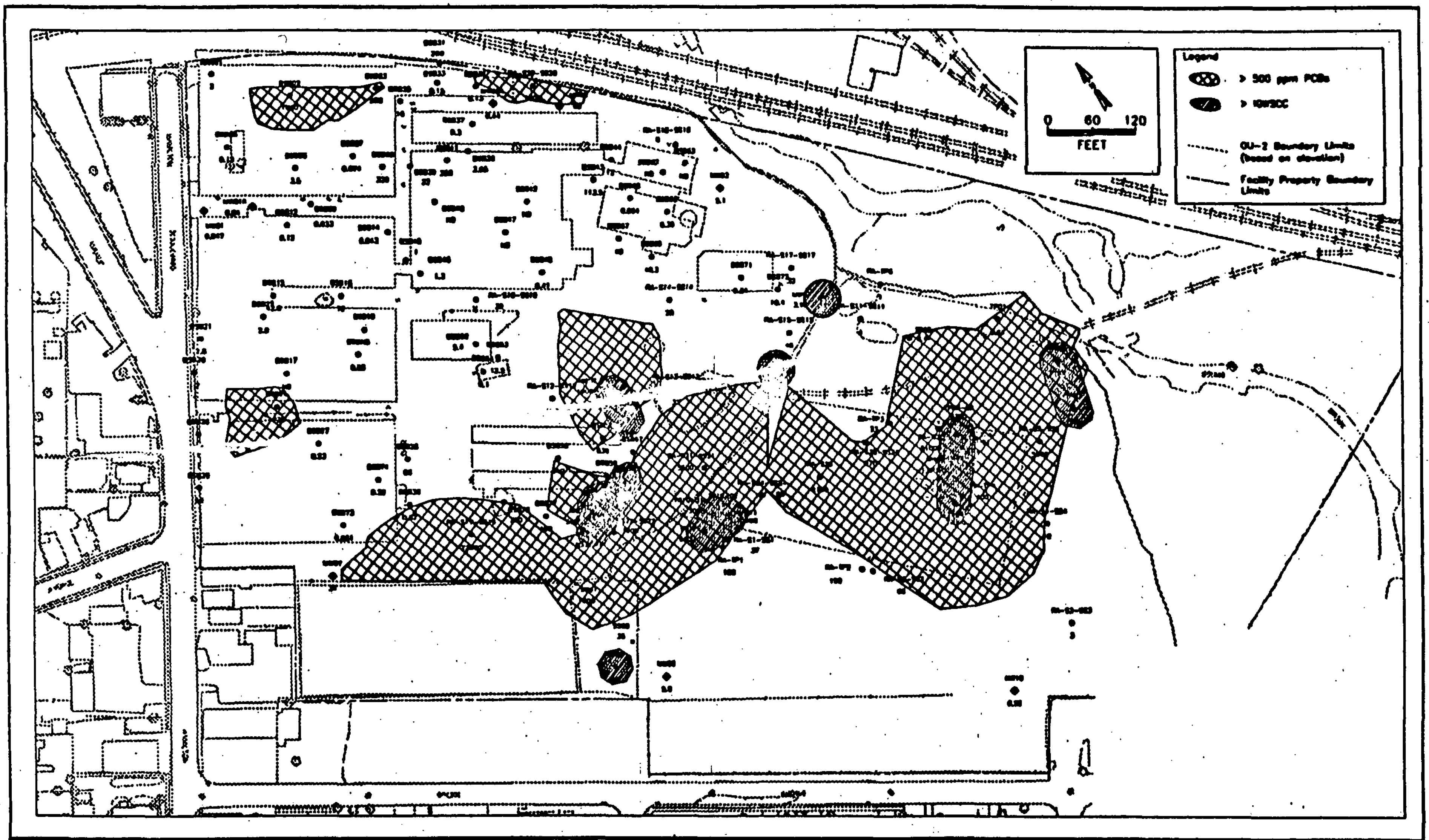

Figure 5
Cornell-Dubilier Electronics Superfund site - Operable Unit 2
Extent of PCB contamination greater than 500 ppm and other COPCs greater than IGWSCC

500262

ATTACHMENT B

PUBLIC NOTICE

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION II
INVI[illegible] PUBLIC COMMENT

Proposed Cleanup for the
Cornell-Dubilier Electronics Superfund Site
South Plainfield, Middlesex County, New Jersey

The United States Environmental Protection Agency (EPA) announces the opening of a 30-day public comment period on the Proposed Plan and Remedial Investigation/Feasibility Study (RI/FS), which addresses the cleanup of contaminated facility soil and buildings at the former Cornell-Dubilier Electronics (CDE) facility in South Plainfield, Middlesex County, New Jersey. As part of the public comment period, EPA will hold a public meeting on **July 13, 2004, at 7:00 p.m., in the South Plainfield Borough Hall located at 2480 Plainfield Avenue, South Plainfield, New Jersey.** The meeting, which will address the proposed cleanup plan, will allow community members to comment on the proposed plan to EPA officials. A final copy of the RI/FS for facility soils and buildings at the CDE facility and Proposed Plan may be reviewed at the South Plainfield Public Library, 2484 Plainfield Avenue, South Plainfield, New Jersey, and at the EPA Region II Records Center located at 290 Broadway, 18th Floor in New York City.

As the lead agency, EPA divided the site into three Operable Units (OUs). The first OU addressed residential, commercial, and municipal properties in the vicinity of the CDE facility. The second operable unit (OU2), the focus of this Proposed Plan, addresses the remediation of soils and buildings at the former CDE facility on Hamilton Boulevard. Additional operable units will address the contaminated groundwater and contaminated sediments at the Bound Brook.

Based upon the results of the Second Operable Unit RI/FS, EPA prepared a Proposed Plan that describes all the cleanup alternatives and provides EPA's rationale for recommending these alternatives. EPA evaluated the following [illegible] building alternatives:

Alternative B-1: No Action
Alternative B-2: Decontamination and Surface Encapsulation/ Institutional Controls
Alternative B-3: Demolition/Off-Site Disposal

EPA evaluated the following five soil alternatives:

Alternative S-1: No Action
Alternative S-2: Excavation; Off-Site Disposal with Treatment (if necessary)/Institutional Controls
Alternative S-3: Principal Threat Excavation; Off-Site Disposal with Treatment (if necessary/Multi-Layer Cap/Institutional Controls
Alternative S-4: Soil Vapor Extraction/Solidification/Multi-Layer Cap/Institutional Controls
Alternative S-5: Low Temperature Thermal Desorption/Multi-Layer Cap/Institutional Controls

EPA recommends Alternative B-3 for the Preferred Alternative in the Proposed Plan to address the contaminated facility buildings. The Preferred Alternative for the buildings includes a contingency remedy that would allow for the decontamination and surface encapsulation of certain buildings that may not need to be demolished. Institutional Controls would also be employed for any structures that are not demolished.

EPA's Preferred Alternative for soils is a combination of Alternative S-3 (Principal Threat Excavation; Off-Site Disposal/Multi-Layer Cap/Institutional Controls), and Alternative S-5 (Low Temperature Thermal Desorption; Multi-Layer Cap/Institutional Controls), described in more detail in the Proposed Plan.

Before selecting a final remedy, EPA and the New Jersey Department of Environmental Protection will consider all written and oral comments on this preferred remedy. All comments must be received on or before August 5, 2004. The final decision document, or Record of Decision, will include a summary of public comments and EPA's responses.

Comments will be accepted in person at the public meeting and/or in written form through August 5, 2004. Please address all written comments to:

Peter Mannino
Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

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U.S. ENVIRONMENTAL PROTECTION AGENCY REGION II INVITES PUBLIC COMMENT

Proposed Cleanup for the Cornell-Dubilier Electronics Superfund Site South Plainfield, Middlesex County, New Jersey

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Alternative B-3:	**Demolition / Off-Site Disposal**

EPA evaluated the following five soil alternatives:

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EPA's Preferred Alternative for solids is a combination of Alternative S-3 (Principal Threat Excavation; Off-Site Disposal/Multi-Layer Cap/Institutional Controls), and Alternative S-5 (Low Temperature Thermal Desorption; Multi-Layer Cap/Institutional Controls), described in more detail in the Proposed Plan.

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U.S. Environmental Protection Agency

Extends

Public Comment Period

for the

Cornell-Dubilier Electronics Superfund Site

The United States Environmental Protection Agency (EPA) released a Proposed Plan to address the cleanup of contaminated facility soil and buildings at the former Cornell-Dubilier Electronics (CDE) facility in South Plainfield, Middlesex County, New Jersey. EPA has extended the public comment period to Saturday, September 4th, 2004.

Documents related to the site may be reviewed at the South Plainfield Public Library, 2484 Plainfield Avenue, South Plainfield, New Jersey, or at the EPA Region II Records Center located at 290 Broadway, 18th Floor in New York City.

All written comments on the Proposed Plan may be sent to:

Peter Mannino
Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

For additional information, please contact Pat Seppi, Community Involvement Coordinator at 1-800-346-5009, 212-637-3679 or email: seppi.pat@epa.gov

ATTACHMENT C

PUBLIC MEETING TRANSCRIPTS

ORIGINAL

U.S. ENVIRONMENTAL PROTECTION AGENCY
CORNELL-DUBILIER ELECTRONICS
SUPERFUND SITE PUBLIC MEETING

B E F O R E:

PETER MANNINO

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T R A N S C R I P T of the meeting of the above-named witness, called for Oral Examination in the above-entitled matter, by and before EILEEN THERESA CORLETT, a Certified Shorthand Reporter and Notary Public of the State of New Jersey, License No. XI02077 at the Offices of SOUTH PLAINFIELD BOROUGH HALL, 2480 Plainfield Avenue, South Plainfield, New Jersey 07080 on Tuesday, July 13, 2004 commencing at 7:03 in the evening.

MR. HAKLAR: My name is Jim Haklar. I am the EPA public affairs person and tonight we are going to be presenting our proposed clean up for the soils and the buildings at the Cornell-Dubilier site. With me tonight is Pete Mannino which is the EPA manager. His supervisor John Prince. We also have Marion Olsen who is EPA's risk assessor. We have Sara Flanagan who works in EPA's regional counsel. We also have representatives of EPA's contractor Foster and Wheeler and we also have representatives of the New Jersey Department of Environmental Protection.

The way that we would like to run this meeting tonight, in a few moments I will hand over the presentation to Pete. He will talk a little bit about the site and then get into our proposed clean up. What we would like to ask is if you please hold your questions until Pete is finished. We will have a question, comment and answer session. We've a Stenographer here today. Your comments are valuable to us, they will be part of the record. And with that I will hand it over to Pete.

MR. MANNINO: Thank you. I have a presentation that is going to take about 20 minutes.

I know that some of you have already heard some of this information before in some of the prior meetings that you have had here in South Plainfield. I am going to try to summarize all that information, try to be brief, if possible, give everyone an overview why we are here.

Before I start my presentation I would like to give you a little background on what we are trying to accomplish here. The Cornell-Dubilier Electronics Superfund Site, as you know, is on a national priorities list of Superfund sites. First of all, before I go too far, in order to simplify things tonight, instead of saying Cornell-Dubilier Electronics Superfund Site I am going to refer to the site as the CDE site or the Cornell site.

Now what does it mean that the CDE site is on the national priorities list? Sites on the national priorities list are some of the most contaminated sites in the country and are the agency's highest concern for EPA. I will try to explain how EPA in conjunction with New Jersey Department of Environmental Protection addressed the sites. The Superfund program has two different stages, the emergency response program, or what we call the removal program and then the remedial program. When a site is first discovered, the removal program will take necessary steps to either stabilize the site or remove an imminent threat. In the case of the Cornell site the removal program works with the property owner, DSC of Newark, in order to stabilize the site. The actions at the industrial park will have included security fencing, which was installed, the undeveloped area of the industrial park was vegetated, drainage controls were installed and signs were posted. The removal program also conducted some of the initial sampling at the site and some of the residential and commercial properties adjacent to the industrial park. The removal program worked with some of the potentially responsible parties to address homes that were contaminated with PCB's.

The second program in the Superfund is the remedial program. That is where I come in. In the remedial program we first perform a remedial investigation. The purpose of the remedial investigation is to determine the nature and extent of the contamination at the site. Because the Cornell site is complex, we broke up the investigation into separate phases or operable units. The first operable unit addressed the contaminated residential and commercial property adjacent to the industrial park. We were here maybe about a year ago discussing EPA's preferred alternative on to how to address those contaminated properties.

Operable unit two, which is the focus and the purpose of tonight's meeting, is to talk about the contaminated soil and buildings at the former Cornell facility. Additional operable units will address contaminated groundwater and contaminated Bound Brook corridor. A lot of people that I have spoken with lately have questions regarding the schedule. How long is this going to take, when is it going to get done. When I get into my presentation I am going to have some slides and I am going to talk about the time frame, but before I get into that I want to give you a little bit of an overview of the Superfund program that will put things into a little bit more of a perspective.

Earlier we were talking about the removal program. When a site is first identified, a preliminary assessment is done and there is a site investigation that is performed. The limited sampling that is collected during that initial assessment is used to rank the site, to prepare a hazard ranking score. The information from that package is used to list the site on the national priorities list.

Once the site is proposed for listing on the national priority list, we are able to perform a remedial investigation and feasibility study that was performed for operable unit two. Once that study is completed we go out to the community with the proposed plan, that is the public comment period and the public meeting is part of that public comment period. Once the agency has had an opportunity to review the public comments, we go out with a record of decision. The record of decision identifies EPA's selected decision on how to address the operable unit. The proposed plan can change based upon comments received from the community during the public comment period. Once the record of decision is issued, we move to the next phase called the remedial design. In the remedial design we prepare a plan on how the work is actually going to get done. We address health and safety issues. We address routes that trucks and other vehicles are going to be using to get into and out of the site. We go into all the details and logistics of how the work is actually going to be performed. That design phase could, depending on the type of work, take several months or could take as long as two years to perform. Once that design is done, then we move into the remedial action when the work is actually going to be performed. We usually talk about construction time frames. So, when you look at the proposed plan and the time frame that I am going to be giving tonight, those are the construction time frames we are talking about once we are in the remedial action, not from tonight's meeting.

The purpose of tonight's meeting is to bring you EPA's proposal on how we plan to address the contaminated buildings and soil at the industrial park. As you know we explored a wide range of alternatives on how to address this contamination and we proposed what EPA believes is the best solution for this site. As part of the process we are seeking the community's input, and I want to stress that community input is a vital part of the Superfund process and I urge everyone here tonight to express their opinions on the proposed plan. You could either do it verbally tonight or if you want, submit written comments during the 30 day public comment period which ends August 5th and Jim will talk about that more later tonight, so I hope we could have a good discussion tonight and we could all leave saying we all accomplished something.

So, let's go into the details about EPA's investigation and where we are going. Basic site map, the Cornell site is bordered by Hamilton Boulevard to the west, Spicer Avenue to the south the Bound Brook in the rear of the facility and then the CSX or Conrail Train Lines. There are two major parts of EPA's remedial investigation that was performed for the industrial park. The soils investigations and the buildings. Let's focus on the soils first.

PCB's were the most prevalent contaminant found on the property. The highest level of PCB's occurred in the central undeveloped portion of the facility where during the remedial investigation we performed test pits and excavation where we unearthed capacitors. The red area in the back of the industrial park is where we found those capacitors. Now, these are photographs that were taken, I am not sure how clearly you can see them from the back, of the excavations and those tests pits. Those box like items on the top are the capacitors that were buried in the rear of the facility. The highest concentration of PCB's that we found at the surface of the industrial park was approximately 51,000 parts per million. The subsurface, the maximum concentration was 130,000 parts per million of PCB. Now, although PCB's are the primary contaminant at the site, there was a wide range of other contaminants also revealed during the sampling. They include volatile organic compounds, semi-volatiles, pesticides and metals. This chart just lists some of the concentrations, some of the maximum concentrations that we have discovered during the RI. Arsenic, for example, at a little over 1,000 parts per million. Lead at 52,000, Aldrin 11,000. There were a total of 23 different metals revealed during the sampling event and 19 different pesticides for the surface and subsurface soils.

Sampling of the buildings revealed

that PCB contaminations occurred in each of the 18 buildings. The maximum concentration found in the building dust was 8300 parts per million. We also found elevated levels of metal, such as lead, chromium, arsenic and mercury in each of the buildings. Lead, for example, was as high as 61,700 parts per million.

Although not part of tonight's meeting, I just wanted to give you a little overview on some of the other work we are doing. We talked about the other operable units, the groundwater investigations. We have already installed 11 groundwater monitoring wells on site. Sampling of those wells revealed concentrations of -- elevated concentrations of volatile organic compounds and of PCB's. For example, trichlorethylene was detected at a maximum concentration of 120.000 parts per billion in the groundwater. PCB concentrations were as high as 84 parts per billion. As I said, there was additional investigations to determine the nature and extent of the groundwater contamination. The Bound Brook sampling of the soil and sediment of Bound Brook basically revealed widespread low level PCB contamination. We took samples of a two and a half mile stretch from the Cornell site all the way down to New Market Pond. New Jersey DEP as a result of that data issued a fish consumption advisory for the Bound Brook and its tributaries. Once the investigation was completed, we performed a human health risk assessment. It is one of the most complicated parts of the investigation. Exposure assumptions were used to generate estimates of the health risks associated with the chemicals present in the facilities' soils and the building dust. The human health risk assessment looked at both cancer and non-cancer affects. The primary risk driver in that risk assessment was PCB's. In addition to the human health risk assessment, an ecological risk assessment was performed. The objective of that assessment was to assess the potential risk of contaminants found at the site. We did a wildlife survey. We delineated wetlands, flood plain assessments and the list goes on. Most of you have heard all that already. Now let's get into the alternatives that the EPA has evaluated in order to address that contamination.

There were three alternatives that were evaluated to address the contaminated buildings. The first one is no action. The second one is decontamination and surface encapsulation which would include institutional control. The third B3 is the demolition of the buildings and off site disposal of the construction debris.

Now, let's go into a little bit more detail about each of these three alternatives. No action alternative is basically a baseline for comparison with the other remedial alternatives. We are mandated in order to evaluate a no action alternative. In this alternative no remedial activities would be performed, no additional site monitoring would be performed. The only thing we would do is every five years re-evaluate the data to determine whether or not there was a need for other action.

The second alternative, B2 involves a decontamination of the surface materials to remove the contamination from the buildings. After the buildings are decontaminated, it would be encapsulated to allow the PCB contaminated surface to continue to be used and remain in service. The estimated present worse cost of this alternative is $18,000,000. Of the $18,000,000, $220 000 would be needed each year, we are estimating, in order to operate and maintain that epoxy coating that would be placed. That $18,000,000 also included approximately $1.1 million to relocate the tenants that are in each of those buildings while the work is being performed.

Alternative B3 is the demolition and off-site disposal. Approximately 22,000 tons of debris would be generated from the demolition of the 18 buildings. That material would be transported off site for disposal. It is possible in order to manage material more efficiently, that those buildings or some of those buildings would be decontaminated prior to demolition. Any non-contaminated building debris could be recycled to the extent possible. The cost of this remedy is $7,000,000 and once again that includes the same $1.1 million to relocate the existing tenants.

Now, let's move onto the soil alternatives. Once again we are looking at no action. There is a total of five alternatives. No action, excavation with off-site disposal and institutional controls, the third is the principle threat excavation with off-site disposal of that material, construction of a multi-layered cap and institutional controls. Alternative S4 is a combination of the soil vapor extraction system, solidification, the multi-layered cap and institutional controls. S5 is an on-site low temperature thermal desorption with a multi-layer cap and institutional controls. Now, once we go into some of the details on these alternatives, you're going to see that there is quite a few common elements in each of these alternatives.

Once again the no action alternative provides a baseline. We are required to evaluate it. No action would be performed, all we would do is a five year review every five years to assess the need for additional action.

The S2 alternative consists of the excavation and off-site disposal of contaminated soils having PCB's at concentrations greater than ten parts per million and other contaminants in the soil that pose an impact to the groundwater. Under this alternative we are estimating there would be approximately 278,500 cubic yards of contaminated soil that would be excavated and shipped off-site. That volume includes approximately 7500 cubic yards of contaminated soil and debris from the capacity of the disposal area that I had pointed out before. What you will notice is that in each of the soil alternatives except for the no action alternative, each alternative has the same component, the excavation of that capacitor disposal area and the transportation of that material off site for disposal. This alternative would require engineering and institutional controls after the work is done and we will go into a little bit more detail later on what those engineering and institutional controls are. This figure shows the area at the industrial park that would require excavation based upon the data that we have now and that comprises that 278 some odd thousand cubic yards of soil. The green areas are the areas that have PCB contamination greater than ten parts per million and the blue are the other contaminants that I talked about.

Alternative S3 -- I'm sorry, alternative S2 has an estimated present worth cost of $114,000,000. Of that $124,000 is estimated for annual operation and maintenance of those engineering controls.

Alternative S3 is the principal threat excavation and this alternative have PCB's at concentrations of 500 parts per million, would be excavated and shipped off-site for disposal. In addition contaminated soils that have other contaminants that are impacted in the groundwater would also be excavated and shipped off-site. Under this alternative there is an estimated 114,500 cubic yards of soil and debris that would have to be shipped off-site for disposal and once again the capacitor disposal area would be excavated and shipped off-site in this alternative. For the soils that remain on the site below 500 parts per million and above 10 parts per billion of PCB's they could be capped. You would still need engineering controls and institutional controls on this site. This figure shows the areas based on data that we have now that would require excavation The red is based on -- shows areas of PCB concentrations greater than 500 parts per million and, once again, the blue is the other contaminants, for example trichloroethylene and some of the other volatiles. Alternative S3 has a present worth cost of $72,000,000. Of that $560,000 would be required to maintain the cap and the other engineering controls that would be implemented.

Alternative S4 is a combination of technologies. The first would be a soil vapor extraction system that would be installed to address the volatile organic compounds. It is basically an installing of wells over a 7-acre area that would suck the contaminants out of the soil. The second part of that remedy would be the solidification of PCB's at concentrations greater than 500 parts per million. Basically, what you are doing is adding some kind of cement like material using augers to solidify and stabilize the PCB's on the site. There would be approximately 107,000 cubic yards of soil that would be solidified on site. Once again though, that capacitor disposal area in the rear of the facility would be excavated and shipped off-site for proper disposal. Another common element soil contains PCB's at concentrations greater than 500 parts per million, but greater than 10 parts per billion, PCB's would also be capped on this site. Once again, the common element of engineering and institutional controls for the site. This alternative has an estimate present worth of

$36,000,000. Of that $440,000 is estimated for annual operation and maintenance for the cap. $330,000 would be the annual operating cost for the soil vapor extraction system while it is in operation.

Alternative S5 on-site low temperature thermal desorption with a multi-layer cap and institutional controls. Soil with concentrations greater than 500 PPM would be excavated put through an on-site thermal absorption unit. The capacitor disposal area, once again, would be excavated. That material shipped off site for disposal. Soils containing less than 500 parts per million or PCB's greater than 10 parts per million would also be capped similar to the other alternatives and, once again, there would be a need for the engineering and institutional controls. Alternative S5 has an estimated present worth of $52,000,000. Of that once, again, $440,000 is the estimated annual operation maintenance cost for the cap. $640,000 would be needed on an annual basis for the operation of the low temperature thermal desorption unit. Each of these alternatives was evaluated and will be evaluated again, these nine criteria. Up to the point we have reached today, the first seven have been done and I'll read them just in case anyone can't see from the back there. The first one is overall protectiveness of human health and the environment. The second is compliance with applicable or relevant and appropriate requirements followed by long term effectiveness and permanence, reduction of toxicity, mobility for volume of contaminants through the treatment. Next is short term effectiveness followed by implimentability and the seventh is cost. What still needs to be taken under consideration is the state acceptance of the proposal alternative and the community's acceptance and those two will be evaluated once the public comment period has ended.

Now, let's go into the preferred alternative, for the buildings EPA is proposing alternative B3, which is the demolition of the 18 on-site buildings. Once again that would result in approximately 22,000 tons of debris that would be transported off site for disposal. The tenants at the industrial park would have to be relocated. Because of Spicer Manufacturing Corps. activities at the industrial park, some of the structures have the potential to qualify as historic properties. Before the building could be demolished during the remedial design phase I talked about earlier, additional historical research would have to be done on those buildings and then once that is done, there would be the need for the recordation of any of the structures that have been determined to be eligible as historic properties. Once again the estimated present worth cost of this remedy is $7,000,000 and the estimated construction time frame is one to two years.

The preferred alternative includes a contingency remedy, which is alternative B2, decontamination and surface encapsulation of any buildings that are not demolished. Any buildings that are not demolished would require institutional controls to ensure that future site activities are performed with knowledge of the site condition. In the proposed plan we talk about reasons why some of the buildings may not be demolished. Some of those reasons -- some of those buildings have to come down because there are PCB's at concentrations greater than the clean up goal beneath the concrete slab. The buildings have to come down in order to get to the contamination beneath the buildings. The Borough of South Plainfield also has a proposed redevelopment for the industrial park. We have seen conceptual designs. We don't know what the ultimate fate will be, so what we are saying is any buildings that are not demolished for any of those reasons would have to be deconed and sealed. For the soils EPA's preferred alternative is a combination of alternatives S3 and S5. Under this combination or hybrid approach, soils containing PCB's greater than 500 parts per million and the other contaminants that may act as a continued source of groundwater contamination, would be excavated. The excavated soil would be addressed with a combination of either the on-site low temperature thermal desorption unit and off-site disposal. There's a couple different factors that determine what soils or debris -- what soils would be put through the thermal desorption unit versus off-site disposal. Irregardless, the capacitor disposal area, the 7500 cubic yards that we have estimated would be excavated and shipped off-site for disposal. The soils containing less than 500 parts per million, but greater than ten parts per million of PCB's would be capped. Soils containing PCB's greater than two parts per million would be subject to engineering control. As a result the remedy would require implementation of institutional controls. Now, this remedy may expose or disturb archeological and cultural resources in the rear of the facility. If during the remedial design or the remedial action eligible subsurface archeological sites are discovered and the remedy has the potential to effect those sites, then an approach such as data recovery would have to be developed. The estimated present worth cost for EPA's preferred soil alternative is $62,000,000. That assumes that half of the 107,000 cubic yards of soil that will be excavated would be addressed through the on-site low temperature thermal desorption units and then that soil will be put back on site. The remaining soil would be sent off-site for disposal at the toxic landfill. Estimated construction time frame for this, for the preferred alternative is two to three years. The key element of this remedy is that it satisfies EPA's mandate under the Superfund program to treat principle threats to the maximum extent possible.

That is basically the end of my

presentation. I think I made it in 20 minutes or so. I will hand it over back to Jim for a minute.

MR. HAKLAR: Thank you, Peter. Just before we get into questions and answers, just one thing I forgot to mention. There are copies of the proposed plan in the back on the table, please take a copy and read it and if you haven't signed in, please sign in. We use that sign-in sheet to update our mailing list and to see how many people come and, you know, if we have to change the format of the meeting.

The way we would like to run the question and answer session is if you have questions, if you could come up to the podium, for the benefit of the stenographer could you state your name and then just spell your last name. So, with that, does anybody have any questions?

MR. D'PASACRITA: I'm Walter D'Pasacrita, D apostrophe, P-A-S-A-C-R-I-T-A. I haven't been to the first session that you had here, so I don't know whether you addressed any part of your presentation on the effect of the residents in the township. Now, let me explain that a little bit. If you were talking about friable asbestosis.

Fribal asbestosis then if there are contamination to the general public here, we can measure that in the numbers that had asbestosis, mesothelioma and lung cancer. There is nothing that I have heard so far as a link to the toxicity, the contamination that you have addressed. Maybe you can give some answer to that?

MR. MANNINO: I'm going to need Marion's assistance with this. As I said during the remedial investigation, we did a human health risk assessment. Actually, let me turn it over to Marion. She could explain it in more detail.

MS. OLSEN: As Pete mentioned during our remedial investigation we do conduct a risk assessment and the risk assessment is basically two pieces. We are looking first at exposure and secondly at the toxicity of the chemical. All of the chemicals, as Peter mentioned, we have toxicity values that were based and developed within the agency, they are used nationwide that will give us an indication of the toxicity of the individual chemical including PCB's and including other chemicals. As part of that the agency does look at example, they look at animal studies and that is the basis for developing these toxicity values. As Pete also mentioned, as you can see in the proposed plan we also looked at who would be exposed or potentially exposed on the site. We are looking at a reasonable maximum exposure, so for example we did look at the potential for a trespasser to come on-site and what the risks for that individual would be and those are future risks because there are restrictions about access onto the site in the area that has the heaviest contamination. We looked at other groups that may be exposed, both currently and in the future if there was construction on the site, what would the construction worker be exposed to and we combined the exposure information and our knowledge about the toxicity of the chemicals and developed the risks and that is what is presented in the risk assessment. Within the Superfund program we look under the law at the risk range and that, again, was evaluated to determine the need for action at the site.

MR. HAKLAR: Anybody else questions?

MR. D'PASACRITA: I don't think that was answered. It will come up again.

MR. HAKLAR: Yeah, sure.

MR. D'PASACRITA: I want to know whether there have been any figures here for the people in the town that have suffered any affects from these contaminants. You mentioned the evaluation of contaminants and you only mentioned one tetrachloroethylene, vinyl chloride and methylene chloride. There are other contaminants in that family. I know these chemicals were used in the town not far from this site, none were found?

MR. MANNINO: The risk assessment looks at all of the data that was collected at the site. We had said that PCB's were the primary risk driver. There were a series of other contaminants found at the site. As I said, 23 different metals, 19 different pesticides that are either volatile or semi-volatile. All of that data was evaluated in the risk assessment. To answer your earlier question, I think, we do not -- we did not do a study of the community to determine who has been sick over the past several years or if any of the members of the community have any health affects.

MR. D'PASACRITA: Well, then in that respect you have nothing to show that what you will do here would be a successful program to eliminate this particular hazard that is affecting people. We can assume that is affecting people, but no figures. I don't understand this.

MS. OLSEN: I think if I could just clarify a little bit more. Within the EPA, again within the Superfund program and our law, we do conduct risk assessments. That is our basis for determining the need for facts. What you have mentioned are more epidemiological studies or looking at health effects within an area. Now, these are typically conducted by the New Jersey Department of Health and Senior Services. They have registries within the state that look on a county level and they also look statewide at incident rates for different diseases, do comparisons and look for any potential impact and that is an ongoing program within the New Jersey Department of Health and Senior Services. If they identify a potential problem then they would do further investigations within their program and it is just the way these registries are developed, they are looked at at the state level and that is something that is ongoing within the state.

MR. HAKLAR: Question over there.

MS. O'BRIEN: My name is Ginny O'Brien, O, apostrophe, B-R-I-E-N. I live at 117 Madison Drive, South Plainfield. We are talking about PCB's, okay. Am I correct on knowing that that particular chemical is like a dust that flies through the air?

MR. MANNINO: PCB's were used at the industrial park up to 1962 as a coolant. They are an insulator basically. They were used in Cornell's process of manufacturing capacitors. The manufacture of PCB's was banned in the United States in 1977, I believe. They are an oily substance, an oily liquid At the industrial park, because the material was disposed of in the rear of the facility, they were absorbed by the soil. Prior to EPA coming to the site in 1996, 1997 that industrial park was unpaved. Most of the industrial park was unpaved. Because of vehicles traveling at the industrial park, tractor-trailers, people coming with their cars to get to work during dry times of the year, that created dust. That dust was blown by winds and has impacted the residents adjacent to the industrial park. We found PCB's in their soils and also in their dust and in some of the homes. I think it was a total of 15 homes. We have already cleaned those 15 homes and so I am not sure if that answers your question regarding the dust.

MS. O'BRIEN: Yes, but did you do a study in the perimeter of this town to see if that dust, in fact, was in other people's soil or did you just stay on the site?

MR. MANNINO: No, no, no. We did, and I am trying to figure out the best way of explaining it, we performed the work on the residential properties and the business around the industrial park on the phased approach. We first looked at the homes on Spicer, on Hamilton and then we went one block over. By the end of the study we sampled -- in the southern portion of the site we went from Spicer all the way to Roosevelt School. I am not sure if you're familiar with that area. We went, on the eastern portion of the site, we went up to 100 feet past Belmont. We sampled properties along Metuchen Road on the eastern portion and then we went on the eastern portion, we went up to Hancock and we sampled down New Market Avenue.

MS. O'BRIEN: None were found in that

area?

MR. MANNINO: What we found was, as you moved further away from the industrial park, decreasing trends in the concentration. The highest concentrations were found in the homes closest to the industrial park, Spicer, Belmont, Garibaldi, Delmore those blocks. We did find, as we did our sampling, that there are some homes that we need to do additional investigations in and that is part of the remedy that we collected a year ago. What we found is that there are still some homes, I believe it is four, that we need to remedy -- excavated the soils and there are other homes, I think about 59 where we need to do additional sampling. There was at lease one sample on each of those properties that exceeded the State of New Jersey .49 parts per million for PCB's. So, we need to go back to those homes and do additional sampling. All of the homeowner's have received notification regarding the results of the sampling, and so to answer your question, I think to summarize is we did a broad survey of the area and we have reached a point where we started seeing all these non-detect -- we didn't find any PCB's, for example, on Hancock and on

Bergen. We also sampled, before I forget, because of potential impact of the Bound Brook and flooding, we sampled homes on Schillaci, Lowden, Oakmoor and there is one more, Schillaci has two roads to it.

MS. O'BRIEN: Fred Allen Drive?

MR. MANNINO: Fred Allen Drive, yeah, which is quite a ways away from the industrial park, but we just wanted to make sure that flooding wasn't impacting those homes. So, yes, we did a broad survey and it answered the question.

Are there still some unanswered questions? Yes, and we need to go back to those homes and that is why we were here a year ago, and we have told homeowners we need to come and do additional sampling.

MS. O'BRIEN: What about Spring Lake Park, you said that the water was contaminated within that park, correct, the water way?

MR. MANNINO: No, not the surface water. What happened was each -- the Bound Brook, New Market Pond, Spring Lake, some of the tributaries like Cedar Brook, Green Brook all have a little different situation with it. Spring Lake, EPA collected samples, fish samples from Spring

Lake. We found that some of the fish in the lake had PCB's in the tissue. The State of New Jersey went back and collected additional soil and sediment samples along the beds of Spring Lake. What those results found was there were pesticides and some other contaminants in those sediments, but no PCB's, to the best of my knowledge, in any of those sediment samples from Spring Lake and the surface water from Spring Lake was never sampled, but keep in mind where Spring Lake is in relation to the Cornell site, the Bound Brook/New Market Pond there is a dam there, so there are some issues related with Spring Lake, but to answer your question, what we have told the Borough of South Plainfield is based on our conversations with New Jersey Department of Health and Senior Services, the surface water is safe to use for recreational purposes. The only issue comes right now is from the Bound Brook and New Market Pond at Spring Lake regarding the consumption of fish from those water bodies. That is why the fish advisory was issued, which basically says you can catch, but you must release those fish.

MS. O'BRIEN: But then you're saying

that the water does not show any sign of it --

MR. MANNINO: The water in Spring Lake is safe to use for recreational purposes. I cannot tell you -- we have collected so many samples, I cannot tell you formally that there is no detectable concentration of PCB's in the water. I will look for the answer to that. I will let you know.

MS. O'BRIEN: That is what concerns me because that water overflows into the land. You have children, you have animals that are on that every day of the week, so if that water is soaking into that soil who says it is not in the soil?

MR. MANNINO: No, no, let me back up, I'm sorry. For the Bound Brook corridor EPA has collected over 1500 soil and sediment samples. Included in that we sampled every 50 feet and then every hundred feet transection, then four samples along each of those lines. We looked at some of the areas where there were some of the more highly concentrated areas of PCB contamination and we looked at the potential for an impact, and we sampled Veteran's Memorial Park. We sampled three different areas near Fred Allen, Schillaci, Oakmoor, also where there is a potential for flooding, areas that we know that flood. We looked at that data, and, yes, in some of those flood areas, not on the residential properties, but in the low lying flood areas there was some actual low level concentrations of PCB's. As soon as we received each of those sampling events, we went to New Jersey Department of Health and Senior Services and our risk assessor looked at the data. They do a consultation for us. They look at the data. They look at who is using those recreation areas. Based on their review of the data, they said it was safe to use those areas for recreational purposes.

MS. O'BRIEN: What do you mean by recreational, explain that please?

MR. MANNINO: For the person who goes fishing and decides to go wading in the water in order to drop their line, it is safe or kids who drive their ATV's through some of the paths that are back there, it is safe for people who want to use the trails that are back there, so every time we had the data, we went to the New Jersey Department of Health, our risk assessor looked a the data, they said it's safe for the current use. Do we need to still do a more detailed and thorough investigation and collect more samples, yes, and we will be doing the full blown risk assessment, both the human health and ecological once we have all that data, but we have already collected 1500 samples and those people that I just talked of looked at that data over the time that it has been collected and if you would like, I could get you a copy of their report that says it is safe for this use. A copy of that report is in the South Plaintiff Library. All the documents that have been generated for this site, what we call the administrative recreation, is located, one copy is in the EPA's office in New York and the other copy is in the library in the reference center. So, if you leave your mailing address or contact, I will make a copy of all of that.

MS. O'BRIEN: The question is why a cancer found site within our town, why haven't we asked to have a cancer survey done in this town to see if there has been numerous cases pointed out?

MR. MANNINO: I am going to let Marion answer that.

MS. OLSEN: Again, the New Jersey Department of Health and Human Services has what is called a tumor registry. Any person that develops cancer within the state, the hospital and their physician report to this tumor registry that has been in existence for a large number of years and they do ongoing reviews where they compare the incident rates. They look at any trends in the data, they look at it at the county level, they look at it at the state level and this is basically studies that are ongoing within the Department of Health and Senior Services and those reports are published. They do have a home page. They are published on a yearly basis and I would be happy to work with you if you would like to talk to the Department of Health directory.

MS. O'BRIEN: I have, that is why I am asking. I have called the cancer society and I have asked what the rate of cancer was within South Plainfield and I was told, my answer came back to me is we don't do town for town. We do counties, just the counties, so that doesn't tell me what the cancer rate here in town might be and in my own experience, I am seeing an awful lot of it.

A VOICE: There's 18 cases just on Delmore Avenue of cancer over the years. I can show you the names and addresses over the years 18 and more.

MS. O'BRIEN: We have it right within my own community, tremendous amounts of people coming down. I have a brother right now that was on his deathbed, he was dying of lung cancer and I want to know if this has anything to do with why he came down with it.

MS. OLSEN: There are a number of factors that contribute to disease. As I said, your concern is specifically for the town.

MS. O'BRIEN: I think that the study should have been done once this site was noticed, to take a check on this community because when this first came up, I called the EPA. I asked the question on what radius around this particular site would it effect the people in South Plainfield and I was told a three mile radius. Well, that takes in almost all of South Plainfield --

MS. OLSEN: Pete, I am not --

MS. O'BRIEN: -- that could be effected by the Superfund site.

MS. OLSEN: I think we need to look at exactly -- what are they looking at, NPL listings, they may have been looking at different data. I am not familiar --

MR. MANNINO: I am not sure where the three mile radius --

MS. O'BRIEN: When we first discovered this I was on the committee here in town, so I called them and I asked them and that was one of the responses that came back. There were other neighbors of mine that decided to call to see what their answer was. They were told exactly the same thing. It was a three mile radius around this contaminated site because of the dust factor of the PCB's that would go airborne that could affect the three mile radius around and I even said to them that takes in our whole town.

MR. MANNINO: Let me make two statements. One, our data that we have collected during our RI does not support three miles. The second thing, and I am not sure who exactly you talked to, but what they may have been referring to is one of the things that we do during the groundwater investigation is we do a well survey of a three mile area, typically around a three mile area.

MS. O'BRIEN: Well, your wells didn't prove very --

MR. MANNINO: Well, to determine if there are any residents in the area that are still using private well water.

MS. O'BRIEN: And there were.

MR. MANNINO: So, that might be the survey that they are talking about, but I don't want to speculate because I wasn't part of that conversation, but to answer your question the dust has not gone three miles.

MS. O'BRIEN: What happens when you start -- if you do decide to remove that soil, what happens; how do you contain it that it will not go air born?

MR. MANNINO: Before we can actually go out and do the work, and I think that is one of the misconceptions of some of the people that I have spoken with just recently, a lot of people feel after this meeting that there is going to be a bulldozer out tearing down buildings.

MS. O'BRIEN: You said there would be another meeting in August; right? Didn't you mention that there would be another meeting in

August?

MR. MANNINO: At the end of the comment period, that ends in August, then we have to issue the record of decision, that does the preferred alternative change based upon the community's comments. We then move into what we talked about, what I mentioned the remedial design phase. We develop plans on how the work is going to be done. One of the factors in developing those plans is safety, the health and safety plan. If the work cannot be done protecting the workers' safety or the community surrounding the industrial park or the truck routes or something like that that the trucks are going to be taking, we cannot do the job. We have to take another look at it and figure out another way of doing it. So, we do air monitoring while the work is done, make sure that there is no contamination leaving the site. We have all the health and safety plans in place. We take the measures necessary in order to perform the job properly so that the workers who are doing the work aren't impacted and the nearby residents and community is not impacted by air emissions, dust and a long list of other items.

MS. O'BRIEN: When you did remove some of the soil from some of the homes, there were two homes that I saw on Hamilton Boulevard, that soil was wide open. When you drove down the road that soil was wide open when you removed it. It wasn't covered, it wasn't protected. It was wide open as it went into the truck and it sat wide open on the truck.

MR. MANNINO: The trucks before they leave the site are covered to make sure.

MS. O'BRIEN: Maybe when they leave the site, but while they are working that is open to the air.

MR. MANNINO: We need a way to take the soil from the homeowners ground, put it in the backhoe and load it into the truck. We had, on each of those properties, a network of air monitoring stations to determine whether or not there was any dust generated there and if there was any contamination in that dust.

MS. O'BRIEN: To me, I am not trying to argue with you, to me when I ride by and I see open soil going into a truck, that is open for dust. There has to be dust. It cannot be eliminated.

MR. MANNINO: I understand your point. It's a valid point, but we take the measures to minimize any dust that would be generated.

MS. O'BRIEN: But I am looking at how many people might have been contaminated while you were doing that job and that is what I am concerned about when you start on this. There has to be a better protection than what I saw when you started digging this up. That is my opinion. Thank you.

MR. HAKLAR: Someone over here was making a comment, I don't know if they want to.

MR. MANNINO: Mr. Hogan?

MR. HOGAN: William Hogan, H-O-G-A-N. How do you determine which way you're going to excavate this or clean it up?

MR. MANNINO: Those exact details are going to come to bare during the remedial design. Let me say one more point, Mr. Hogan, one of the things we are trying to do here at the agency is to provide the community with as much information as we have as it becomes available. We have had numerous information sessions, public meetings. One of the things that we are going to try to do is as we work through this design process, is continue to have those information sessions here at the town hall and start to relay that information to the community. What will the truck routes look like if the material is being shipped off site; what will the site look like; where are we going to be putting these thermal desorption units; how are vehicles going to come and go on the site, so as that information becomes available, we are going to put it out to the community.

MR. HOGAN: But the buildings aren't the cause of the site. The buildings are the result of the site's contamination.

MR. MANNINO: The buildings are part of the problem.

MR. HOGAN: But over here is where the dump is, right back in here, in the back here. All that area there was the underground dump right there. That is -- the dump actually was bigger than that. It was all around this way. Now you have got the stream right there. Now all of this saturation is going through and saturating the contaminated Bound Brook stream, which you know where that goes, out there. However, there is a layer of shale from Spring Lake which is about 12 to 14 feet deep underground level and it gradually slopes up to that contamination. Now, through the years all of this rain water that went down and filtered all this water down and that shale acted as a carrier into Spring Lake. That is why Spring Lake had PCB's in there and will continue to have it in there. Now, Bound Brook is contaminated. This stream here has got PCB's, high contents, you admit that.

MR. MANNINO: Yes.

MR. HOGAN: The bottom of that creek is higher, worse than Spring Lake, so there is a natural flow from that creek towards Spring Lake, so are you going to dig that dump up or are you going to pave over it --

MR. MANNINO: No, no, no, it's not going to be paved.

MR. HOGAN -- because if you pave over it, you're not going to do nothing.

MR. MANNINO: These capacitor disposal areas under each of those alternatives, including the preferred alternative, about 5100 square feet surface area will be excavated, shipped off-site and then into a toxical landfill.

MR. HOGAN: All of that on that side?

MR. MANNINO: Everything that is in red right now will go off-site and, hold on, for the preferred alternative everything in red and blue here would be excavated. Everything in red and blue is everything that exceeds 500 parts per million of PCB's, which is a source material and everything in blue is for the volatiles that are impacting the groundwater.

MR. HOGAN: We used to burn it, we used to burn that stuff and then the smoke was settling. PCB's used to settle all over the town. It is the underground stuff that is the killer.

MR. MANNINO: You're right. The site has impacted the groundwater. The site has impacted the Bound Brook. When you look at the proposed plan we have objectives. What are the goals, remedial action and objectives for this remedy. Protect human health and the environment, first and foremost.

Second, to prevent the minimized run off from the industrial park to the Bound Brook so that is an objective. We need to achieve this and this will do it. The third is prevent the minimized -- I forgot the exact language that is in the proposed plan, but mitigation, migration of_ contaminants to the groundwater will remedy, will achieve that.

MR. HOGAN: Where you have the purple areas there, that has the highest PCB's?

MR. MANNINO: The red are PCB's. The blue are, for example, the volatiles.

MR. HOGAN: You're just going to excavate those, is that it?

MR. MANNINO: Base on what we know now during the remedial design phase we need to collect some additional samples to figure out exactly where we will begin at and where it will end.

MR. HOGAN: So, you're going to take tests as you continue the excavation?

MR. MANNINO: That's correct.

MR. HOGAN: You have topped that now. You put the black top over that now; is that correct?

MR. MANNINO: There is an asphalt cover on the developed portion or the western portion of the site, yes.

MR. HOGAN: What I am trying to figure out is that is still contaminated all the way up to and including the brook, it has to be.

MR. MANNINO: There are different levels of contamination at different parts at the site. When you look at ten parts per million clean up goal, almost all of the 20 some odd acres of the industrial park has some level of contamination over 10 parts per million.

MR. HOGAN: That was like 12-foot deep. That is 12-foot of contamination. That there where the other area is are not that deep, you go down a foot and you probably get it out.

MR. MANNINO: That's right. I mean we collected samples through the slabs in each of the buildings and we saw that some of those foundations, those buildings are built right on top of that slab, that bedrock that you just referenced before, as you move further towards the Bound Brook it generally slopes.

MR. HOGAN: All the way to Spring Lake.

MR. MANNINO: Right, so in that undeveloped area of the site, we encountered bedrock at around 10 -- somewhere between 14 to 16 feet in this area here. The maximum depth is 14 to 16 feet.

What we are saying is anywhere on that industrial park, both horizontally and vertically where soil contains concentrations greater than 500 parts per million we will excavate that material.

MR. HOGAN: Well, I have to relay a little story that won't taken much time. There was a man that lived behind the Polish National Home. He used land to up there and I would always get him to do some work for me now and then. He was telling me I got up this morning, I went up to the Bound Brook there, the brook there, I washed my hands, shaved any everything else. In six months that poor guy was dead with the most advanced cancer I have ever seen in my life. PCB's, what I can read, can be ingested right through the skin. Can you tell me is a little bit of cancer better than a lot or is a little bit of PCB's in the bloodstream better than a lot of PCB's, where do we draw the line here?

MR. MANNINO: As Marion mentioned before, the risk assessment looks at the cancer and the non-cancer and there is a threshold and risk range to each of those. You raise a very legitimate concern, but we have the data and we have collected data for now seven years -- let me finish, Mr.

Hogan. We are coming to the community with a way to address this problem, to solve the problem, create a final remedy. I understand your concern. I understand the concerns of some of the other members of the community. We have to make a decision now how to address that contamination.

MR. HOGAN: I have to be quite frank with you, you I have dealt with before. I consider you to be an honest and upright man. However, all the way down the line I don't trust the government anymore. Believe me, I'm sorry, but I just don't trust anybody in the government so what we are saying now is perhaps true, but I want to find out. I want to check. I am going to keep checking just to see where we are. Have they lowered the standard of PCB's and how many parts per million now or what's higher or lower now, it is much lower than it was before. There have been all conflicting reports I have been reading on PCB contamination, the clean up, everything else. At least you're going to dig this dump out. That is a step in the right direction.

MR. MANNINO: As I said, before as we develop these plans, as we get past this major milestone we are going to keep coming to the community and say this is how we plan on implementing this work, this is how we plan on tearing down these buildings as they inform where the truck routes are going to go, you give us your feedback. I don't know what more I can do other than provide you with that information and if we make poor judgment on one of the truck routes and the community comes back and says there is a better way of doing it, as you can see there is a rail line, those are issues that we need to work through.

MR. HOGAN: You are going to put up monitors, right?

MR. MANNINO: During the work, once we are actually doing the work there will be a complete network of monitoring for the workers, for the residents, for the work being done. We will explain to you before the work begins, we will come back to the community and explain what that network looks like, explain that to you, so I am hoping you will have a little bit more ease and understanding on what we are doing.

MR. HOGAN: The house I live in now, three people have died of cancer before I bought it.

I don't make things like that up. One guy next door, his daughter had cancer, these are over the years, and I called up and they said, health and whatever it is, I called up, they said "Well, it has to be within the last five years for it to be noted," but that's been there since 1930 something.

MR. MANNINO: I am not questioning the facts regarding members of the community. I am just at a point now, Mr. Hogan, where I have to say to the community, we have been sampling for seven years. We have documented everything that we can regarding the extent and the type of contamination at the industrial park. We are at a point now where we have to say how do we fix this problem.

MR. HOGAN: That is ground zero right. That is where you have got to go, you know that.

MR. HAKLAR: I know there have been a lot of hands up, just bear with me. Over here, you over there.

MR. CHAPIN: Rich Chapin, C-H-A-P-I-N. I'm a licensed professional engineer. I am retained by the Edison Wetlands Association to help them resolve a couple of questions.

The alternative S2 starts out with 270

some thousand cubic yards. The other alternatives drop down to less than half that number. Could you explain that different please?

MR. MANNINO: Sure. The alternative you're referring to is alternative S2.

MR. CHAPIN: With the 287?

MR. MANNINO: Right, that has a clean up goal for PCB's of ten parts per million.

MR. CHAPIN: Universal?

MR. MANNINO: For all the soil. It also includes the New Jersey Department of Environmental Protection impact on groundwater soil clean up criteria. Those other contaminants are acting as a source of groundwater contamination. That component, that second line there, applied to alternative S2 through S5.

MR. CHAPIN: I got that. Where is the ten PBC's from, what is the basis?

MR. MANNINO: The State of New Jersey has two as an industrial clean up number.

MR. CHAPIN: You're using ten. Where did you get that, how did you get the ten?

MR. MANNINO: EPA has a guidance document that has a range between 10 to 25 parts per million for a clean up goal for commercial properties across the country. We are using the lower boundary of that range, 10 PPM's. It has a clean up goal for residential properties of one part per million which we use. The number you are referring to is the State of New Jersey clean up criteria for PCB's for commercial properties of two parts per million and they have a residential number of .49.

MR. CHAPIN: You're using EPA's number not the DEP's number?

MR. MANNINO: That's correct.

MR. CHAPIN: So, how did you get from -- so, the other numbers are based, the other numbers, tonnages, yards are based on the 500 principal threat note?

MR. MANNINO: Right.

MR. CHAPIN: Could you explain to everybody what the principle threat number is?

MR. MANNINO: Sure. Once again EPA had various documents that identify 500 parts per million as a principal threat for PCB's. What a principal threat is, a principal threat is a source material that is either highly toxic or mobile that cannot either be properly contained or that, if there were to be exposure to concentrations greater than 500 parts per million, it would pose an unacceptable risk.

MR. CHAPIN: Unacceptable risk by definition?

MR. MANNINO: Marion?

MS. OLSEN: It basically would exceed the risk range that EPA uses and this would be specific for workers or for residents. That is why there is a difference in those two numbers.

MR. MANNINO: If I could just add to that. If you look in the proposed plan, for the other people who want to follow the definition of what a principal threat is, on page seven there is a box in the top right-hand corner of the proposed plan that defines source material and principal threats or PCB's.

MR. CHAPIN: Your presentation was talking about institutional controls for soils between two and ten.

MR. MANNINO: Engineering controls.

MR. CHAPIN: Is it engineering controls or it is institutional controls and what is that?

MR. MANNINO: Each of the alternatives S2 through S5 require the implementation of institutional controls. An example --

MR. CHAPIN: I understand exactly what it is, for them please.

MR. MANNINO: You asked the question so I am answering you. An institutional control, an example of an institutional control is, for example, a deed restriction. There are different types of deed restrictions. I am not an attorney. I am not going to speculate on exactly what that deed restriction or that institutional control will ultimately look like at this property. There are different types of them. The goal of that institutional control is to ensure that any future owners of the industrial park or users of the industrial park are well aware of the site conditions, that is the institutional control.

The engineering control we are saying that anything above the State of New Jersey's clean up goal of two parts per million, which you referenced before and up to ten parts per million requires an engineering control. There's different types of engineering controls. They could be a cap, asphalt or concrete. It could be a soil cover. It could be vegetative covers. It could be a sign. It could be a fence. It could be signs, so what we are looking at at this site is not one solution for the whole entire site, it's a very complex and complicated site and for people who were at some of the prior information sessions, what we always talked about is what is the likelihood of a combination of technology to address this complex site. So, when you look at most of these alternatives, it's a combination. The institutional controls, the engineering controls, the cap, the excavation, the thermal desorption and the list goes on.

MR. CHAPIN: In the present worth analysis that you are using, what time frame?

MR. MANNINO: Present worth was looked at over 30 years for O & M, operation and maintenance, of the cap and a one percent value was used to calculate the present worth.

MR. CHAPIN: What happens after 30 years?

MR. MANNINO: The property continues

to have to be maintained by the property owner as per the requirements of a long term O & M plan. Thirty years is used as a baseline by the EPA to compare one alternative to the next alternative. The institutional control and the engineering control runs with the property. They do not expire at any date or time.

MR. CHAPIN: And the assumption in the future, the funding comes from SST or the future property owner to maintain this?

MR. MANNINO: That is a possibility. One of the questions I have been asked is who is going to pay for this. There are potentially responsible parties for the site. EPA could pay for the funding, that decision hasn't been made. I don't know what the remedy is going to cost yet until the record of decision has been issued.

MR. CHAPIN: The multi-layer cap to control whatever it is you're going to control on site, conceptually where is it going and what is it going to look like?

MR. MANNINO: The multi-layer cap is for contaminated soil greater than ten parts per million up to 500 parts per million because everything above 500 parts per million will be addressed, so when you go back to this figure, the areas in the green are greater than ten parts per million. If you were to do an overlay between this slide and that slide, it would tell you what the difference is. Now, the reality is this is an active industrial park. You're going to have structures there, it's part of the borough's master plan. Multi-layer cap, if you were to read the recent building study, it explains potentially what we mean by multi-layer cap, two or more layers and we leave it up to the person doing the work, the flexibility to design what that cap is going to look like. We don't want to say it has to be six inches of concrete and that is the only way it could be. We are saying we understand it is an active industrial park. The structures, the parking area would be incorporated as part of that multi-layer cap and when you have a parking lot, even though there maybe a small area, hypothetically, that there is no PCB concentration detected or any other concentration detected, if it's in the middle of the parking lot, the reality of it is it is going to be paved. I have never seen a parking lot in the middle of the parking stalls that has a two foot area of soil exposed, so you have to keep in mind where we are.

MR. CHAPIN: So, there is not going to be one cell located someplace where soil that has to be excavated or concentrated?

MR. MANNINO: The area that has to be excavated under all the alternatives and the preferred alternative, is 5100 square feet that we have identified here. Our test pit excavations are based on aerial, our interpretation of aerial photographs. Those areas shaded in red under all the alternatives and the preferred alternative would be excavated and shipped off site. Is that your question?

MR. CHAPIN: No. That is going -- that is being excavated and shipped off site. There are areas with greater than 500 outside those areas?

MR. MANNINO: Yes.

MR. CHAPIN: That is going to be excavated and processed in the thermal desorber; is that correct?

MR. MANNINO: Yes.

MR. CHAPIN: After it comes out of the

thermal desorber are you going to put it back where you got it from or are you going make one bigger pile of all of it and make a cell saying not allowed on the unpaved area of the site?

MR. MANNINO: We have gone into details on exactly how much soil, we are estimating that half is going to have to go off site for disposal and the other half will be put back on the site. Exactly where it is going to be put back --

MR. CHAPIN: It is a hundred thousand tons of soil, that is a lot of dirt. But there has been no concept that, okay if we have to put a cell out here -- I am worried about the destruction if this is going to be a landfill --

MR. MANNINO: No, because --

MR. CHAPIN -- a landfill cell on the property.

MR. MANNINO: There won't be a landfill cell on the property because the goal is after the material comes out of the thermal desorption unit, we need to design that thermal desorption unit, see ultimately what the soils are going to come out as. One of the reasons that we are saying that some of the material, some of the soils and debris is going to be shipped off site is because the thermal desorption unit may not be able to properly handle that material. First of all, the thermal desorption unit can't handle the metallic debris, so all that material has to be sifted and removed from it. Now, because of the level of volatiles in the soils, if you start sifting that debris out, you have to deal with the issue of vapors because of the volatiles, so because of the site specific conditions and because -- and another site specific conditions are the high levels of PCB concentrations, the thermal desorption unit may not be able to properly handle that material. That material will go off site. Exactly what that volume is, we are estimating it is half and it is not until we go through the design phase and ultimately be able to determine what the soil coming out of that unit looks like, are we able to determine what we are putting back.

MR. CHAPIN: My question was where. I understand the process, but you don't know --

MR. MANNINO: That's correct.

MR. CHAPIN: -- right now you're going to scrape up a hundred thousand tons of soil from around the site, run it through the machine, but you don't know where it is going to stay on the property, you don't know where it is going to go?

MR. MANNINO: Correct. We haven't gotten to that level of detail yet.

MR. CHAPIN: In theory the level of PCB's at the tail end of the thermal desorption unit is less than 500 it is acceptable, is that so?

MR. MANNINO: No. We need to get into the ultimate design, but from what I have seen from thermal desorption units, you're able to bring down the concentrations of PCB's to a lot greater concentration than that.

MR. CHAPIN: What the unit achieves is a different criteria that you have been talking about between 10 and 500?

MR. MANNINO: To answer that question, the ultimate -- those criteria have not been established yet.

MR. CHAPIN: And the last comment is in reviewing the truck traffic down Hamilton Avenue I think you would serve yourself and the community very well to seriously look at rail transportation. It is right there.

MR. MANNINO: It stares everyone in the face, it is right there. That's a decision that has to be evaluated during the remedial design.

MR. CHAPIN: The costs are based on trucking?

MR. MANNINO: Yes.

MR. CHAPIN: All on trucking?

MR. MANNINO: Yes.

MR. CHAPIN: Okay, thank you.

MR. HAKLAR: Yes, in the back.

MR. D'ALESSANDRO: Michael D'Alessandro, D apostrophe, A-L-E-S-S-A-N-D-R-O. I believe we spoke on the phone earlier today. I'm a new tenant in one of the buildings on the site. You talked about PCB's. I wanted to know are those buildings, the actual buildings that were used by the electronic company when they manufactured their capacitors or were those constructed after they left?

MR. MANNINO: Most of the buildings at the industrial park were in place at the time Correll operated at the site. I believe there were a couple of buildings in this area here that came either at the end of their occupation at the site or sometime thereafter.

MR. D'ALESSANDRO: Building 6, that long rectangular one up at the top near the railroad right there where the red is behind it, I occupy that building. The floor has a black tar like residue in my warehouse area, is that residue from this PCB's process do you know?

MR. MANNINO: No.

MR. D'ALESSANDRO: Do you know what that residue is?

MR. MANNINO: I don't know, but if you would like, I could come out to the industrial park as I said earlier in other conversations, take a look at the area you're concerned about, talk to you about the specific results of building six, and I could give you the exact construction time of building six.

MR. D'ALESSANDRO: Because I need to know what activities that I am performing there may aggravate the situation, creating dust or air born situations that will harm my employees.

MR. MANNINO: As we mentioned in today's call after we received the initial sample results, we met with New Jersey Department of Health and we also had OSHA come in and take a look at the results. Both said, as we discussed, that the buildings can be used for continued use, for the existing use. We handed out, when we had the data we met with each of the building tenants and we have a series of fact sheets, and I will provide you with those facts sheets, on how to minimize you and your employers and other businesses that you have at the building, a way to minimize your exposure to the dust and some measures on how to clean when you're cleaning the building.

MR. D'ALESSANDRO: My last comment is I have an air handling unit, air conditioning unit on the back of the building. It is currently not operational, but I want to know if I should get this thing fixed because it's right behind that building where that red concentration is. Will that air handling unit pick up any type of contaminants emanating from the soil and bring it into my office space?

MR. MANNINO: That whole area is paved now. What is not paved is from -- there is a fence and the area north of the fence going into the railroad tracks is not paved. I will take a look at yours. This whole area here is paved.

MR. D'ALESSANDRO: Is that my building or is this my building right here because I am connected to the mattress place.

MR. MANNINO: Okay, that building --

MR. D'ALESSANDRO: All right I thought this red section behind my building was actually my building over here. All right, that is all I have. Thank you.

MR. HAKLAR: There is a gentleman over here?

MR. MONTAGUE: My name is Pete Montague. Thank you very much for the opportunity to ask questions and speak.

MR. HAKLAR: Could you spell your name, sir?

MR. MONTAGUE: M-O-N-T-A-G-U-E. I am going to turn this way so the people that are affected by this can hear. My question and my comments, I am sure that you all know that studies at Rutger's have shown in the last two years that down in Southern New Jersey there is a cloud of PCB's rising off of Camden and there is a cloud of PCB's rising off of Philadelphia and they are being carried by the wind current over the Pine Barons and they fall down to the ground in the Pine Barons. They get into the fish and now there are fish advisories because air born PCB's have contaminated the fish in the Pine Barons. So, PCB's move around and not in the form of a dust. It seems to me they turn into some kind of a gas, sunlight strikes, they turn to some kind of gas. They float into the air. They come down in the rain, get into the water, get into the fish concentrations and the fish become toxic, so my concern is that this site should be made as clean as possible. My assumption is that as time passes, anything that is left on this site is going to move off of the site, rain, wind, are eventually going to take your cap apart and whatever is left on the site when you go away is going to enter the general environment of Central New Jersey and contribute to the general contamination of Central New Jersey, which is already pretty substantial. So, I would hope that this site would be made as clean as humanly possible to minimize trouble in the future.

Now, my first question is does remedy S2, in your opinion, is remedy S2 the cleanest possible that this site could be made; how did you select Remedy 2 as the most extensive? Is it not possible that you could do better than remedy S2?

MR. MANNINO: Remedy 2 has a clean up goal of 10 parts per million PCB's. We are saying everything above 10 parts per million would have to be excavated. Are there levels of contamination below non-detectable than 10 parts per million that exist at the site, yes. So, to answer your question you would have to excavate additional soils in order to achieve a lower clean up goal.

MR. MONTAGUE: So, given that you have got extensive PCB contamination, but you have also got 19 different pesticides and 23 different metals including cyathium, chromium, lead, dioxins, I mean you have got a witch's brew of toxic materials on this site, any of them at levels that exceed New Jersey's standards for clean up for either residential or industrial properties and yet you focused in on PCB's and said we are going to do a clean up that takes care of the PCB's, of part of the problem. What about all of this other witch's brew of stuff that is on the site that your clean up just doesn't mention?

MR. MANNINO: To address that point, it's a valid point. A lot of those chemicals that you talked about, the other metals, the pesticides, are commingled with the PCB's. So, when you're digging up the PCB's, you're also digging up volatiles, you're digging up the pesticides and the metals. Now, your question regarding can we do better, why do we look at 10 parts per million? When we develop our clean up goals we look at what is the current and what the potential future use is for the property. We kept hearing back from the Borough of South Plainfield that this is zoned commercial, we intend it to stay zoned commercial, so when looking at the commercial property, you look at a range, as I said before, 10 to 25 parts per million of PCB's. Now, each of these remedies looks at other components, other technologies in addition to excavation in order to achieve those objectives that we laid out in the proposed plan. Capping, for example, to prevent the direct contact to some of these contaminants, that yes, as you said, will be staying behind at the site.

MR. MONTAGUE: So, what is the duration of the cap? What is the duration of the hazard? Let's say you have got 50,000 parts per million in the soil on the site, what is the duration in time of that hazard? It's essentially infinite. That stuff is never going to degraded. It is going to be toxic. It is going to be there. What is the duration of your cap?

MR. MANNINO: We, for cost purposes only, estimated 30 years and we estimated that for the cap it would cost approximately $440,000, I believe is the number I quoted before, for the operation and maintenance of that cap on a yearly basis. As I said before, those requirements to maintain that cap, there will be a plan in place that will require periodic inspection and repair of in cap as it degrades. Those requirements do not end after the period of 30 years. They continue with the property while it is being used for commercial purposes.

MR. MONTAGUE: Well, do humans -- can you point to an example where humans have affectively watched something like that cap over a 50 year period and really taken care of it and patched it up every time it broke? Do we actually have real experience of humans doing this or is this just something we say we are planning to do?

MR. MANNINO: Now, we have followed this approach at other Superfund sites throughout the country.

MR. MONTAGUE: For how long?

MR. HAKLAR: There is one in Edison where we are going into our ninth year. You have to remember that Superfund is only a little over -- it was formed in 1980.

MR. MONTAGUE: I just don't think we aught to put too much confidence in a plan to fix things up 50 years from now and protect our children and our grandchildren. I think it would make better sense to clean the stuff up now and get it off the site and get rid of the problem.

One last thing, this is a question, I didn't understand your -- on page eight your reference to the non-cancer risk estimate. You give a non-cancer risk estimate of 1100, but 1100 what? What are the units?

MR. MANNINO: I am going to ask Marion.

MR. MONTAGUE: Then you give another one at 1700, 1700 what and another one of 3800, 3800 what, what are the units and what is the risk and how is it calculated? I couldn't find an answer to that.

MR. MANNINO: I am going to ask Marion to answer that question for you.

MS. OLSEN: What that is is a comparison. What we have done within the agency is defined through review by expert scientists, scientists from across the country, they have looked at data. They have identified a level and it is called a reference dose. It is basically a level below which we do not expect adverse non-cancerous health affects. This is based on animal studies that were constructed. What we do on the exposure side, we look at who is being exposed. We look at their activity patterns, we look at the frequency of exposure and we look at the concentrations and we compare the two so what that is saying is that it is 1100 times higher than the dose that we are concerned about. There are no units associated with it and it is described under -- in the box under what is called the hazard index. That is where the description is provided.

MR. MONTAGUE: So 11 then is a big

number?

MS. OLSEN: Yeah, and that is the basis for us going forward and taking action on this site is that it is 1100 times the 1100 we should be worried about. The other is 37 times the level we should be concerned about. These are really high numbers. Again, I would also point out the area is an area that is a fenced area so that exposure is not a question for them going in there. It is a site exposure we are looking at.

MR. MONTAGUE: I have seen lots of kids climb fences like that. I don't have a lot of confidence a fence is going to protect kids from toxic materials.

MR. MANNINO: There are also warning signs on the fence, I am going to estimate ever hundred feet, that explain that it's a hazardous waste area and that people should not be trespassing.

MR. MONTAGUE: One last question, your risk assessment seems to focus on death, particularly cancer, but do you take into consideration the affects of this witch's brew of chemicals that we are going to leave on the site on the nervous system?

MS. OLSEN: I'm sorry, I didn't mean to interrupt you.

MR. MONTAGUE: What is your response on the nervous system?

MS. OLSEN: We looked at each individual chemical, and as Pete mentioned, there are a large number of them. There are pesticides, metals and other organic chlorines found. The primary risk drivers that we found were the PCB's. We looked at everything else. We looked at various health affects, so if a chemical was identified as causing a neurotoxic affect, that was looked at. If it was identified as causing any other type of affect based on animal studies, those were looked at. That is the basis for this reference that we mentioned before and what we do then we combine the total and then combine them based on the adverse health effects. So, we do consider additive risks as part of our assessment for both the cancer assessment as well as the non-cancer hazard assessment.

MR. MONTAGUE: Okay, I am very pleased to hear that you do look at those. I wonder if you could supply the community with a list of chemicals that have been found on the site and the studies that you have used to assess the harm from each of those chemicals to the hormone system, nervous system, immune system and the reproductive system?

MS. OLSEN: That is all outlined very carefully in our risk assessment, which is available -- Pete?

MR. MANNINO: At the South Plainfield Library in the reference center.

MR. OLSEN: Chapter 6 gives a summary in words of the entire assessment and appendix -- I'm sorry, actually for each of the chemicals summarizes the source of the data, the source of the reference notes, the cancer assessment that was done, provides that information and then at the back of it, table ten series provides information based on different adverse health affects that are also present.

MR. MONTAGUE: Do you, in doing your risk assessment, take into consideration what the toxic affect would be of a combination of PCB's and chromium and chlorethene and lead, plus defiltration, second-hand smoke, in other words the kinds of things that elderly people are routinely exposed to in their daily lives and that this site would be adding on too?

MS. OLSEN: Yes, we do look at an increased risk based on background. We do not actually quantify that as part of our assessment, but build it into that increase beyond background.

MR. MONTAGUE: But you do assess what the risks of a combination of chemicals on the endocrine system, the nervous system, the reproductive system would be? This is a real revelation to me. I had no idea that science had advanced this far. Thank you very much.

MR. HAKLAR: I want to get to people that haven't made comments and then if we have time we will go around for a second.

MR. CADALDL: My name is Mr. Cadaldl, C-A-D-A-L-D-L. I welcome your presentation. I think you guys are doing a good job. The question I have, and I don't know if you guys are aware of it or not, on the right side of that darkened area where that stream goes through at one time there was a landfill site there. That site did take on some of the Cornell Dubilier products. Now, that stream that runs along there does not go into Spring Lake?

MR. MANNINO: That's right.

MR. CADALDL: That stream does, in fact, go directly into the New Market Pond. Has that area up there been tested?

MR. MANNINO: We sampled, I believe about 500 -- so far about 500 feet upgrade between the Cornell site. We know we need to do additional investigations. For some people they may know there is another Superfund site in South Plainfield called the Woodbrook Road Dump Site, one of the potentially responsible parties performing the remedial investigations on that site, they are going to be collecting additional data, upgrading the site from the Bound Brook surface water and sediment samples. We know we need to do additional investigations. We are going to tie into the work that is being done at the upgrading site, the Woodbrook Road site in order to get a better picture of what is going on along the entire length of the Bound Brook. So, yes, we need to do additional sampling. We are aware of some of these additional issues. We need to start putting pieces of that puzzle together.

MR. CADALDL: How about the Dismal

Swamp area, is that also going to be included?

MR. MANNINO: The Dismal Swamp, as I understand it at this time is 700 some odd acres. The Woodbrook Road Dump site is part of the Dismal Swamp. As I said, we are doing the investigation on the Woodland Road Dump Site and we are going to see where that takes us. We are defining the nature and extent of that contamination. Are we investigating the entire Dismal Swamp, no. That is not in our plans right now.

MR. CADALDL: My other question is this Superfund site here, who takes control of that property when you start your project?

MR. MANNINO: Right now it is an active industrial park as a property owner. The property owner has to coordinate with whoever is the party performing the work. They are legal title holder for the property. We need to ensure that there is a coordination between people doing the work, employees that may be at the industrial park and the property owner. Regarding who ultimately owns the property, that is --

MR. CADALDL: I mean, we are spending millions of dollars here to clean it up and it should be cleaned up. After the site is cleaned is it still the same property owner?

MR. MANNINO: The property owner is a potentially responsible party.

MR. CADALDL: But their money isn't funding this budget?

MR. MANNINO: Right now it is federal funds that are being used to pay for this investigation. The property owner, several years ago, paid for the site stabilization measure implemented under the removal program. They paid for paving, fencing, investigating, drainage controls.

MR. CADALDL: That is Cornell?

MR. MANNINO: No, no, no, the current property owner is DSC of Newark Enterprises, Cornell-Dubilier Electronics and another potentially responsible parties, Dana Corporation, performed and paid for some of the -- for the 13 properties, I believe, along Spicer, Garibaldi, Delmore and Hamilton where the soil was excavated. They paid for that work. They performed that work. EPA, even though it is paying for the work, this work that is being done, our preference is for the polluter to pay. At some point we need to get to a point where the site is cleaned up and the issues regarding liability are resolved. I am not an attorney, we are not at that point yet.

MR. CADALDL: Okay, thank you.

MR. HAKLAR: There was one person in the back? Okay.

MR. ZUSHMA: My name is Make Zushma, Z-U-S-H-M-A. You said you did studies on laboratory rats on cancer here. I have lived in South Plainfield all my life. I lived on Belmont Avenue for about 25 years. You said you talked to property owners. Have you gone back to property owners prior to 1995?

MR. MANNINO: The most recent sampling that we performed was completed, I want to say summer of 2000 for the residential properties. I am getting the nod saying that is the correct date. After we received that data, it was evaluated. I personally mailed out to every resident who lived within that study area, a copy of the map and the results of that sampling.

MR. ZUSHMA: How about the person that moved away that still lives in town? I grew up there. I never got anything. My father never did.

MR. MANNINO: We have an extensive mailing list. Everyone on that mailing list, as Jim said, periodically gets updates. I try to get the information out to as many people as possible. For example, tonight's meeting was published a week ago in the Courier and also in the South Plainfield Observer. I am trying to get the information to as many people as possible. If, hypothetically, someone is not within the study area and not within the mailing list, I don't know who out there has an interest in this information. I can't provide that information, unfortunately, to every single resident in South Plainfield and Piscataway.

MR. ZUSHMA: I am not saying that. I am saying come to the tax office and find out somebody lived in that house for 20 years, 25 years, just recently moved out, maybe we should send something to that person that is no longer in the area. I grew up there. I don't think it is that hard to go back and do that. The other question I have is I work for the Borough of South Plainfield still. I have been here 30 years. I work for the Public Works Department. Has Public Works ever been tested?

MR. MANNINO: On the corner of Belmont and South Plainfield?

MR. ZUSHMA: Yes.

MR. MANNINO: We sampled that property around 1997 under the removal program. There was some levels of PCB's detected in that soil. If you would like I could get you the exact concentrations and the map showing those results, but those concentrations were below EPA's clean up level, so an action was not necessary on that property.

MR. ZUSHMA: And a follow up to what Bill was saying, do you go out and talk to the old timers in the area? I could tell you that the Department of Public Works since I have worked there, every person that left public works and retired has passed away from cancer. No one comes around to find out why, because your studies, according to the Federal Government are probably based on volume. South Plainfield, back in these days on the south side of town didn't have that many people.

MR. MANNINO: Let me just clear up a point. EPA doesn't do studies. It is the state who does those studies. Our studies are that risk assessment. Under the current use of property, what is the potential exposure, what is that risk for the trespassers, the construction workers, the indoor workers, the employer at the industrial park, the maintenance workers, so we are not the ones doing the study that one of the other residents was talking about. That the State of New Jersey does. I personally have interviewed several people within South Plainfield in order to get more background on this site. I have received phone calls from people who said, I am a former whatever it may be, I want to tell you a story. I have heard stories about fires at the industrial park, how the material used to be burned. Anyone who calls me, I will listen. We have tried to put out information as best as we could, mass mailing, fact sheets, newspaper articles to bring great coverage by the press. I cannot, unfortunately, knock in every single door. Anyone who calls me we will interview them. You have to remember, aside from determining where the contamination is, we want to know who is responsible for the contamination so that at end or at some point in the processes the polluter pays.

MR. ZUSHMA: I understand. I'm just concerned about the health risks. When I was a kid we use to play over there. There was no fence back at the time. Everybody I know that is my age now really moved out of the area and really doesn't know anything about this.

MR. MANNINO: Okay.

MR. SPIEGEL: Bob Spiegel, S-P-I-E-G-E-L. There was a lot of stuff covered. I will submit my comments in writing to keep them short. I just had a couple of questions. I was reading the proposed plan several times and there are some areas that I wasn't quite clear. Maybe you could explain. When you compare Area A to Area B, where are those two different areas?

MR. MANNINO: Area A is basically what we call the developed portion of the industrial park. It is basically, for the most part, that area where the site is paved, so basically as a general outline going down Hamilton Boulevard following the fence line that cuts across right about there, it goes up to the Bound Brook and then cuts across. That is Area A and then the back of the facility, the unpaved, but vegetated area, fenced in area, would be the undeveloped portion.

MR. SPIEGEL: Because it wasn't clear when you read the proposed plan which was Area A and which was Area B.

And then also I noticed that you talk a little bit more about the drainage on the site in the proposed plan. Were you talking about the storm sewer grate, the fact that a dye test was done and that indicates there was potential for off-site migration through the storm sewers on site, you said that the area was then paved and it eliminated that potential threat. How was that evaluated in terms of that threat? Was it mitigated by the paving of the roadway?

MR. MANNINO: Okay, what we looked at is there's storm water drainage from the industrial park. There is also drainage within the buildings of the industrial park. We need to get a better understanding what role that drainage system was playing at the site. We did a series of dye tests to figure out where do these drainage systems go to and we found a series of areas in the Bound Brook where they discharge to.

MR. SPIEGEL: Where they pipes or --

MR. MANNINO: They are pipes. They are drainage pipes.

MR. SPIEGEL: Maybe show me where?

MR. MANNINO: I will have to turn to Lynn who conducted most of the RI work.

MS. ARABIA: There is a drain in front of this building which is connected to a drain on the side of the building which came out right about here, into this little tributary and then there is a drain right about here that came out to another pipe right before the bridge.

MR. MANNINO: And if I may go to the RI report, that system of drainage and where the discharge is is a figure in the RI report.

MR. SPIEGEL: How is it determined that the mitigation that was done was effective, that the drains are now not acting as a conduit for contamination to continue on to the Bound Brook?

MR. MANNINO: Basically, by paving the active area of the site, you have cut off the pathway for which soil from the site can enter into that drainage system and discharge into the Bound Brook.

MR. SPIEGEL: Is there still residual

contamination or is there groundwater infiltrating in any of these areas?

MR. MANNINO: There is residual contamination. There are sediments and soils and debris in those pipes that we had sampled that have certain -- that have levels of contamination in them. Those exact levels are in the remedial investigation report. When you look at the feasibility studies on how we plan on doing the work, the feasibility study specifically says the drainage system needs to be address. The way they will be addressed is to be cut and plugged.

MR. SPIEGEL: Would it be beneficial at this point or would it be several years prior to you being -- under the best of situations, it's going to be several years before you could probably get the funding in place. Could you go out in advance and seal those pipes, I mean how much would it cost to keep the edges of the pipes --

MR. MANNINO: It is more than just sealing the edges of the pipe.

MR. SPIEGEL: Would you actually have to take out the sewer grate?

MR. MANNINO: You would have to flush

out the lines to remove any materials that is in there, but if I recall specifically, and I would have to go back and double check, the level of contamination in the sediment or material in those pipes weren't the high levels of contamination that we are finding at the rest of the industrial park. If I recall correctly they were low levels of contamination, so as you're familiar with, Mr. Spiegel, there are removal actions and remedial actions and we talked about that earlier. Low level concentrations in the sediment wouldn't warrant going out and performing a removal action.

MR. SPIEGEL: I guess I have to go back and look at the RI.

MR. MANNINO: All the data is in there. I'll take at look at it when I am back in the office or I will point you in the right direction where that data is. I don't recall exactly how many samples were collected. There was a series of samples and a series of dye tests performed.

MR. SPIEGEL: Was the sedimentation control when you bring that in, the hay bails and the silt fencing which is put along the edge of the property, have they been maintained adequately? When was the last time you have gone out there to inspect those?

MR. MANNINO: I go out to the site all the time. The hay bails that you are referring to and the silt fencing along the fence were designed as temporary measures until the vegetation in the rear of the facility, that undeveloped portion, was able to take. Originally there was no vegetation or very little vegetation in the rear of the park, and I recall very clearly at the last meeting we had here a year ago, you said, I'll paraphrase, the rear of the park is not properly vegetated. We went out the week after, and you observed for yourself that at that time it was properly vegetated so the silt fencing and hay bails were temporary measures until the vegetation, which was the mechanism that we had designed to prevent the off site mitigation, was put in place. There are still remnants of that material there, where ever they are, but they served their function. They served their purpose and they played there role and now it is the vegetative cover that is acting to minimize the run off from the industrial park and that undeveloped area there.

MR. SPIEGEL: Also I would encourage EPA, and I will submit the rest of my comments in writing because I have comments regarding the clean up of the buildings and a few other details that I saw out on these proposed plans, but I would encourage EPA to go after, to the maximum extent possible, the responsible parties. I believe you said you hope to have some kind of consensual agreement signed by the end of the summer, but I would encourage you to go after them as aggressively as possible because of the fact that I don't believe, if you don't have the responsible parties to pay for this, Superfund isn't going to have any money whatsoever to put towards this or if they do, you're going to be waiting a very, very long time. I know because I work on a lot of site plans in Washington on this issue. Superfund is, in fact, out money at this point in time. Especially for a site that is as complicated as this, so I would encourage the EPA get a consent document signed as quickly as possible. And if the responsible parties do not want to step up to the plate, we can go after them as aggressively as possibly. South Plainfield wants this property redeveloped. Unless you have a

PRP, a viable PRP that you can get to fund the clean up, it is going to be a very, very long time before this clean up begins and it is going to be a very, very long time before it's redeveloped.

MR. MANNINO: I just want to make a point to clear the record, you mentioned a consent agreement being signed by --

MR. SPIEGEL: You said there was going to be some type of oversight document signed by the responsible parties.

MR. MANNINO: What the proposed plan talks about is operable unit one, which is the residential and commercial properties. EPA is currently in discussion with some of the potentially responsible parties regarding the performance of that work. Those discussion are ongoing. We expect to complete those discussions sometime by the end of the summer. That is regarding the first operable unit.

MR. SPIEGEL: Which is a very expensive one because even a bad clean up at such high levels is going to running $70,000,000, approximately according to your numbers. The levels that you are proposing to leave on site are extremely high. Even at those levels the clean up is extremely expensive to demolish a building, to clean up the soil at those levels, again, without a viable responsible party it's going to be very difficult for EPA to fun this Superfund Program under the current state of Superfund. Thank you.

MR. HAKLAR: It's to 9:00. I just want to find out by a show of hands how many still have comments because if it is a lot of people, we are going to give our Stenographer a little break.

MS. FAYDER: How could I get a copy of the test that was done on our property?

MR. HAKLAR: Why don't you come up and ask you question.

MS. FAYDER: I'm Deborah Fayder, F-A-Y-D-E-R. I live at 201 Delmore Avenue. We bought our house in 1999 and how could I get a copy of any tests that were done on our property?

MR. MANNINO: Call me, I will send you a copy. If you don't mind, just call me tomorrow I will put them in the mail. Just remind me to put them in the mail. 201 Delmore; correct?

MS. FAYDER: Yes, that is correct. Like I said that is my only question.

(Whereupon a recess was taken.)

MR. HAKLAR: Anyone else who hasn't commented yet, do they have any questions or comments?

Okay, well, then we are going to go for people who have commented.

Mr. Hogan?

MR. HOGAN: One quick question, the safe level, according to your statistics, is 50 parts per million, how much is it?

MR. MANNINO: There are two clean up goals for PCB's that are described in this proposed plan. The first one under alternative S2 is ten parts per million, okay. That is for commercial use. The second clean up goal is 500 parts per million for PCB's and the implementation of a cap to prevent direct contact with that material.

MR. HOGAN: That has been based upon tests by -- laboratory tests and all that by scientist.

MR. PRINCE: Let me clarify that for Mr. Hogan a little bit.

MR. MANNINO: Sure.

MR. PRINCE: In all of the active

alternatives two through five it is the goal of all of those alternatives to prevent contact with any soils with concentrations greater than ten parts per million.

MR. HOGAN: Anything below ten?

MR. PRINCE: Anything above ten we prevent exposure to that. Now, the nature of this site is pretty much the whole property has PCB concentrations in the soil greater than ten so that, at minium, there would need to be some sort of protection from exposure to any soil that remains on site, then some of the other alternatives focus on this highly contaminated stuff. We have identified it as PCB concentrations greater than 500 PPM's. In a number of the alternatives we identify some more aggressive actions to take to address that stuff, in particular to either take it away or treat it, to remove those really high levels and then put it back or to fix it, sort of fix it in concrete and leave it on the site, in any case to prevent that much more highly contaminated stuff to migrate or just to, in some cases, take it off altogether. So, there's really a ten PPM threshold for exposure for any of the active remedies that we looked at and then some of them looked at more aggressive actions for this really highly contaminated stuff.

MR. HOGAN: Would you drink a glass of water with levels greater than or less than ten parts per million or nine parts per million of PCB's a year?

MR. MANNINO: Mr. Hogan, that is the level that we are proposing for the soil. Drinking water has a separate standard.

MR. HOGAN: What is the standard on that?

MR. MANNINO: Five parts per billion PCB's. Now let me make a statement because that's an issue that came up at one of the last meetings that we had and there was a lot of concern about it.

MR. HOGAN: But this is what people around that area have been exposed to whether it is ten plus per million or whatever. They have been exposed to that, you see, by either the dust or any other way, they have been exposed to that year after year, day after day. It maybe lower than ten parts per million or it is calculative over a year, two years, five years it adds up. That is the problem. It's happening every day.

MR. MANNINO: Current site conditions are preventing exposure or that contact to those contaminated levels as in those temporary measures. Building are paved, the rears -- the undeveloped portions of the property is vegetated, so the conditions that existed prior to 1996, 1997 no longer exist. What is there now is temporary and we need to do that final --

MR. HOGAN: What it is I am still concerned about is why then did they put the limit on going back to check on the cancer test in an area. They put a time limit on that, you see? Why did they do that?

MS. OLSEN: Let me clarify something here first. I gave you the wrong value. I calculated it quickly in my brain. It is 100 parts per trillion or .5 parts per billion in water. Let me please clarify that. I don't know who told you about the five years.

MR. HOGAN: Five years is all they go back to.

MS. OLSEN: May I ask who you spoke with?

MR. HOGAN: This is a couple years

ago, three or four years ago when all this started.

MR. OLSEN: What I would like to do, if you will permanent me, I would like to arrange a conference call with you and someone who is working in the registry as an epidemiologist a the New Jersey Department of Health and let us clarify what these issues are.

MR. HOGAN: How far back can you go?

MS. OLSEN: It very much depends upon the registry and I believe the New Jersey Registry is much more older than that.

MR. HOGAN: How long is it?

MS. OLSEN: I believe it is 1980's. I am doing that from memory. Some of the oldest registries in the United States were develop originally in the 1970's, so that was -- it's based on the collection of data, development of data base systems and things of that nature, but I would very much like to set up a conference call so we can speak with someone at the Department of Health and clarify your concerns.

MR. HOGAN: That is fine, okay.

MR. HAKLAR: Any other questions?

MR. MONTAGUE: One short question, you

prefer a $60,000,000 clean up and your most expensive one is $114,000,000 clean up. There is obviously a cost benefit analysis involved here. Is human health just dollars when you do this kind of analysis? What is the value of a cancer death in dollars that you use, a, and, b, if you're just going to do something reduce a child by ten points by exposing them to long term contamination, what is the value of that in dollars that you use to make this comparison?

MR. MANNINO: I think it goes back to what John was saying before, that when you look at each of the alternatives, S2 through S5, a combination alternatives that we have collected, the level of protection is the same. It is just different ways of achieving that level of protection. The exposure for someone who comes on to the site, hypothetically, under a clean up that we are proposing versus the clean up that you have referenced S2 would be the same under both clean ups. It is just achieved by different ways.

MR. MONTAGUE: Well, then let me ask my question a slightly different way. If you were really talking about cleaning up all the stuff on the site, it would be more expensive than S2 and you could weigh that against not making -- fewer people getting sick, fewer people getting harmed in the long term and you put a dollar value on that human harm to make the comparison. What is the dollar value of a human life that you use, what is the dollar value of a child who is slightly impaired?

MR. MANNINO: I am sorry, but I have to disagree with your point. I haven't put a dollar value on those health issues. The dollar value is to compare the alternatives that are all protective. If you're comment is we should have proposed a clean up that has a more stringent clean up goal than ten parts per million for the site, that is a legitimate comment and my answer to that would be, though, we have to look at what the future use of the property is and we have been repeatedly told that is it commercial, industrial. For us to look at clean up goals that are intended for residential property on something we know is commercial, really is difficult to put into the big picture on what we are trying to achieve here. You get the potential for being criticized on both ends. If we were to turn around and hypothetically say we can use it as residential at one parts per million, the cost of that alternative, yes, would be greater than the $114,000,000 because, obviously, there is much more soil to be removed. However, when looking at the big picture, I think that I would receive the criticisms that you need to look at what the future involvement of that property is and meet and develop clean up goals and have the site ultimately cleaned up to what its realistic use is. Now, if the borough would have came to us or the property owner and said we have a proposal here to make this into residential properties, we would have considered that future use in planning the alternative and say there is the possibility that this property could be residential, and we need to take that that into consideration, but once again, we kept hearing back from everyone that this property would remain commercial and there would be an institutional control deed restriction to say that that property would be remaining commercial.

MR. HAKLAR: Anything else?

Okay, I think I just want to make one final comment, remember that the public comment period does end on August 5th. If you have any comments, please submit them to Peter. You will find the address in the proposed plan and please visit the library to look at the administrative record and Pete, do you have anything else?

MR. MANNINO: I just want to thank everyone for coming down.

MR. HAKLAR: Thank you very much for coming.

CERTIFICATE

I, EILEEN THERESA CORLETT, a Notary Public and Certified Shorthand Reporter of the State of New Jersey, LICENSE NO. XIO2077, do hereby certify that prior to the commencement of the meeting, was duly sworn by me to testify the truth, the whole truth and nothing but the truth.

I DO FURTHER CERTIFY that the foregoing is a true and accurate transcript of the testimony as taken stenographically by and before me at the time, place and on the date hereinbefore set forth, to the best of my ability.

I DO FURTHER CERTIFY that I am neither a relative nor employee nor attorney nor counsel of any of the parties to this action; and that I am neither a relative nor employee of such attorney or counsel and that I am not financially interested in the action.

Eileen Theresa Corlett

EILEEN THERESA CORLETT, C.S.R.
Notary Public of the
State of New Jersey

My Commission Expires December 24, 2008
Certificate No.: 2108104

ATTACHMENT D

WRITTEN COMMENTS

AREA CODE 908
Mayor's Office-226-7601
Administrator/Clerk-226-7606
Assessing-226-7623
Building Dept.-226-7640
CFO-226-7602
Computer Services-226-7649
Emergency Mgmt.-226-7718
Engineering/CME Assoc.-732-727-8000
Environmental-226-7621
Finance-226-7615
Fire Official-756-4761

BOROUGH OF SOUTH PLAINFIELD
2480 Plainfield Avenue
South Plainfield, NJ 07080

ENVIRONMENTAL COMMISSION

AREA CODE 908
Health-226-7630
Library-754-7885
Municipal Court-226-7651
Plan Bd/Bd. of Adj.-226-7641
Police-755-0700
Public Works-755-2187
Recreation-226-7713
Recycling-226-7621
Social Services-226-7625
Tax/Sewer-226-7610
Senior Center-754-1047

August 3, 2004

Mr. Peter Mannino
Remedial Project Manager
U.S. EPA
290 Broadway 19th Floor
New York, NY 10007-1866

Re: Cornell-Dubilier Electronics Site
~~Propose~~d Plan for OU2

Dear Mr. Mannino:

At its July meeting, the South Plainfield Environmental Commission discussed the remedial alternatives presented at the EPA's public meeting on July 13. Most of the members attended the meeting. They thought that there were many questions that were not relevant to deciding on a remedial strategy.

The Environmental Commission agrees with the EPA's Preferred Alternative, which combines Alternative S-3 and S-5. Because there are still so many uncertainties about the extent and nature of the contamination that will have to be dealt with, the EC believes we will need the flexibility offered by adopting a two-pronged approach of soil treatment where possible and removal where necessary.

There was some concern with what form the Low Temperature Thermal Desorption system would take. However, the EC concluded that the aesthetic and environmental impacts would be temporary while the advantages of lower cost and of decontaminating the soil would be permanent.

Yours truly,

Alice S. Tempel

Alice S. Tempel
Environmental Specialist

Cc: K. Thomas
L. Randolph

AREA CODE 908
Mayor's Office-226-7601
Administrator/Clerk-226-7606
Assessing-226-7623
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BOROUGH OF SOUTH PLAINFIELD

2480 Plainfield Avenue
South Plainfield, NJ 07080

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Recreation-226-7713
Recycling-226-7621
Social Services-226-7625
Tax/Sewer-226-7610
Senior Center-754-1047

September 8, 2004

Mr. Peter Mannino
United States EPA
290 Broadway
19th Floor
New York, NY 10007

RE: Resolution – Hamilton Boulevard Industrial Site
333 Hamilton Boulevard, South Plainfield, New Jersey

Dear Mr. Mannino,

Attached please find a certified copy of Resolution #04-278 which was approved by the South Plainfield Governing Body at their meeting on September 7, 2004.

The Mayor and Council of the Borough cannot stress enough their whole-heartedly support the expeditious cleanup of the Hamilton Boulevard Industrial Site and believe that the representatives from Cornell Dubilier and Dana Corporation have provided a viable cleanup alternative. We urge the EPA to endorse the proposed cleanup plan as submitted by these companies.

Should you require any additional information, please do not hesitate to contact me at 908-226-7606.

Sincerely,

Vincent Buttiglieri, RMC
Administrator / Municipal Clerk
Borough of South Plainfield

Encl.

BE IT RESOLVED BY THE GOVERNING BODY OF THE BOROUGH OF SOUTH PLAINFIELD, NEW JERSEY, THAT:

WHEREAS the property located at 333 Hamilton Boulevard, more commonly known as the Hamilton Boulevard Industrial Site, has been declared a Superfund Site; and

WHEREAS the Borough of South Plainfield wishes to have this site remediated expeditiously and cost effectively as possible:

NOW THEREFORE BE IT RESOLVED that the Governing Body of the Borough of South Plainfield hereby endorses the Remediation Plan proposed by Cornell Dubilier and Dana Corporation for the property located at 333 Hamilton Boulevard, commonly known as the Hamilton Boulevard Industrial Site which has been designated as a Superfund Site; and

BE IT FURTHER RESOLVED that the Borough Administrator is directed to submit a letter and/or memorandum to the EPA to confirm the Mayor and Council position in reference to the clean up of the Hamilton Boulevard Industrial Site.

SEP - 7 2004

Approved...

Clerk of the Borough of South Plainfield

Mayor of the Borough of South Plainfield

I certify the forgoing to be a true and correct abstract of a resolution regularly passed at a of the Common Council of the Borough Borough of South Plainfield, held

September 7, 2004

and in respect a true and correct copy of its minutes

Clerk of the Borough of South Plainfield

#04-278

500374

Tina R
<TRussell@mrmarchitecture.com>
08/05/04 03:17 PM

To: Pietro Mannino/R2/USEPA/US@EPA
cc:
Subject: Cornell-Dubilier Electronics Site - Public Response Letter

Dear Mr. Mannino,

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey.

As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish.

The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million. It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human health and the environment.

In addition, the plan fails to address a number of other crucial issues:

The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing their contamination.

Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation.

In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Tina Freedman

Marlboro Township, New Jersey

LindaLovello@aol.com
08/01/04 01:00 PM

To: Pietro Mannino/R2/USEPA/US@EPA
cc:
Subject: EPA's Proposed Plan for the Cornell-Dubilier Electronics site in S. Plfd., NJ

Dear Mr. Mannino,

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey.

As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish.

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Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation.

In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Linda Lovello
Edison, NJ

Patricia Miller
<wolfmoonwiccan@yahoo.com>

08/02/04 01:15 PM

To: Pietro Mannino/R2/USEPA/US@EPA
cc:
Subject: Re: Comments: Cornell-Dubilier Electronic, site 333 South Plainfield, NJ.

Dear Mr. Mannino,

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey.

As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish.

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Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation.

In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Patricia E. Miller
12 Northwood Dr.
High Bridge, NJ 08844
(908) 638-8028

David Wheeler <dwheeler@edisonwetlands.org>
08/03/04 03:13 PM

To: Pietro Mannino/R2/USEPA/US@EPA
cc:
Subject: Proposed Plan for Cornell-Dubilier Electronics Superfund Site

Mr. Mannino,

Following are Robert Spiegel's comments on the Proposed Plan for the Cornell-Dubilier Electronics Superfund Site. Please contact me if you have any questions.

Thank you,
David Wheeler
Program Manager
Edison Wetlands Association
732-287-5111

Dear Mr. Mannino,

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey.

As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish.

The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million. It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human health and the environment.

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Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation.

In summary, I urge the EPA to use the State criteria for Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,
Robert Spiegel
Executive Director
Edison Wetlands Association

Dear Mr. Mannino, August 2, 2004

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey. As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish. The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million. It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human health and the environment. In addition, the plan fails to address a number of other crucial issues: The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing their contamination. Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation. In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Thomas Politowski 8-2-04

500382

Dear Mr. Mannino, August 2, 2004

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey. As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish. The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million. It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human health and the environment. In addition, the plan fails to address a number of other crucial issues: The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing their contamination. Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation. In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Jeanne Politowski

Dear Mr. Mannino, August 2, 2004

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey. As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish. The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million. It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human health and the environment. In addition, the plan fails to address a number of other crucial issues: The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing their contamination. Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation. In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Daniel Politowski

Dear Mr. Mannino, August 2, 2004

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey. As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish. The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million. It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human health and the environment. In addition, the plan fails to address a number of other crucial issues: The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing their contamination. Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation. In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Devin Politowski

Freshman highschool student

Dear Mr. Mannino, August 2, 2004

I am writing you with comments regarding the U.S. Environmental Protection Agency's Proposed Plan for the Cornell-Dubilier Electronics site at 333 Hamilton Boulevard in South Plainfield, New Jersey. As you may know, Cornell-Dubilier is an extremely hazardous site even by Superfund standards. The EPA's own risk assessment has found that this site poses a cancer risk in excess of 3 out of 100. And one of the highest levels of PCBs in the state of New Jersey are found in the fish caught in the Bound Brook adjacent to Cornell-Dubilier, where many local residents still unknowingly fish. The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this irresponsible proposal, and ask the EPA to use the acceptable State standard of 2 parts per million. It is obvious that the EPA is placing more priority on redevelopment and cost concerns than on human *health and the environment. In addition, the plan fails to address a number of other crucial* issues: The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing their contamination. Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation. In summary, I urge the EPA to use the State criteria Cornell-Dubilier's PCB contamination cleanup, rather than far higher criteria that puts public health at risk. Likewise, the EPA must stop allowing employees to work around elevated levels of PCBs without a thorough characterization of the contamination.

Sincerely,

Kim Rlitowsk, CMT. RP.

August 4, 2004

Deborah A. Mans, Esq.
Policy Director
NY/NJ Baykeeper
52 W. Front Street
Keyport, NJ 07735

Mr. Peter Mannino
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, NY 10007-1866

**Re: Cornell-Dubilier Electronics Superfund Site, S. Plainfield, NJ
On-site Soils and Buildings-Operable Unit 2 (OU-2)
USEPA Proposed Plan for Remedial Action**

Dear Mr. Mannino:

Please accept these comments on the above-referenced proposed plan on behalf of NY/NJ Baykeeper ("Baykeeper"). Baykeeper is a conservation and advocacy organization that has been working to protect, preserve and restore the Hudson-Raritan Estuary since 1989.

Baykeeper is extremely troubled by the EPA's proposal to leave PCB levels at 500 parts per million (ppm) on the site after clean-up. This is 250 times the State-allowed level of 2 ppm for unrestricted use. While state regulations do allow the establishment of site-specific criteria, the EPA has not demonstrated that the levels it is proposing will be as protective as the 2 ppm level.

Indeed, the proposed plan for remedial action is sorely lacking in any specifics as to how the contamination left on-site will be isolated. The multi-layer cap for the levels of PCBs between 10 and 500 ppm is undefined and the engineering controls for the levels of PCBs between 2 and 10 ppm are likewise undefined. How is the public supposed to comment on and be aware of the methods for protecting the public health when the proposed plan leaves this issue vague and undefined? It also places a question on the priority for the EPA on this site – is it the protection of the environment and public health or the speedy redevelopment of this site?

In order to address this issue **the EPA should be using the acceptable state standard of 2 ppm for the clean-up standard for the entire site.**

Additionally, the EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, allowing people to work in the buildings right now without fully characterizing the contamination is unacceptable. There must be a short-term plan to address this outstanding issue.

Further, the State of New Jersey requires a deed notice when contamination above its most restrictive cleanup criteria will remain on-site, indicating a deed notice and engineering controls are required for the CDS for all soils with greater than 0.49 ppm PCB. The Proposed Plan only includes a deed notice for all soils greater than 2 ppm. PCB contaminated soil between 0.49 ppm and 2 ppm are not addressed at all by the Proposed Plan. They will neither be placed under the multi-layer cap nor subject to a deed notice. The EPA needs to address this issue.

One of the highest levels of PCBs in the state of New Jersey is found in fish caught in the Bound Brook adjacent to the Cornell-Dubilier site, where many local residents still unknowingly fish. In the short-term the EPA must ensure that adequate signage exists along this waterway to warn the public about the dangers of eating fish caught in the Bound Brook and that a local education campaign, in the appropriate languages, is conducted.

Thank you for your attention to the issues outlined in this letter and I look forward to your response.

Regards,

Deborah A. Mans, Esq.
Policy Director

Robert Takash <edisongw@earthlink.net>

07/29/04 09:47 PM
Please respond to Robert Takash

To: Pietro Mannino/R2/USEPA/US@EPA
cc: Robert Spiegel <raritan1@aol.com>
Subject: EPA_SoPlfd_Site_Problem

Dear Mr. Mannino:

There are some serious concerns for many of us living in the South Plainfield and Edison (NJ) area. Under your management at the United States Environmental Protection Agency, the Superfund Site at the Cornell-Dubilier Electronics property, located at 333 Hamilton Boulevard in South Plainfield (NJ), should be safeguarded in the remediation and clean-up process.

The EPA is proposing to leave PCB levels at 500 parts per million (ppm) after cleanup, or 250 times the State-allowed level of 2 ppm. We strongly disagree with this seemingly irresponsible proposal! We also request that the EPA use the acceptable New Jersey State standard of 2 parts per million. Hopefully the EPA is not placing more priority on redevelopment and less protection of people and their surroundings.

Moreover, the proposed plan overlooks many other issues, such as:

The EPA's Preferred Alternative for the building remedy seeks to either demolish the buildings or keep people out of contact with the buildings in the future. However, right now the EPA is allowing industrial workers, including women of children-bearing age, to work in these buildings without fully characterizing the contamination.

Likewise, the EPA ignores those soils contaminated with between .49 and 2 ppm of PCBs. Our state requires that a deed notice and engineering controls be implemented for such contaminated soils, yet the EPA ignores this without providing any explanation.

Overall, hasn't the lessons of better contamination control been learned yet from the 9/11 NYC Site?
Can't the EPA prohibit employees from working around elevated levels of PCB's without a thorough characterization of the contamination?

We look to you, sir, for answers.....and.....urge the USEPA to implement a safer plan!

Respectfully,

Mr. Robert Takash
Residing at 27 Park Way, Edison, NJ 08817
Serving as President of the Edison Greenways Group (a non-profit, NJ registered land trust and advocacy organization)
info@edisongreenways.org
Please note the new email address for our organization.

Peter Montague
<peter@rachel.org>
08/04/04 09:52 PM

To: Pietro Mannino/R2/USEPA/US@EPA
cc: Bob Spiegel <rspiegel@edisonwetlands.org>
Subject: Comments for hearing record of Cornell-Dublier OU2 cleanup

Attached (in a virus-free Microsoft Word file), and appended below as a text file, are comments for the formal record of the public hearing held in South Plainfield, N.J. July 13, 2004, on cleanup options for the Cornell-Dublier superfund site. Thank you for this opportunity to testify. --Peter Montague

[This document is available on the web with live links at http://www.rachel.org/library/getfile.cfm?ID=461.]

Comments by Peter Montague on the Cornell-Dublier superfund site in South Plainfield, N.J.

These are comments submitted for the record of the public hearing (held July 13, 2004 in South Plainfield, N.J.) on the proposed cleanup of the Cornell-Dublier site in South Plainfield.

Thank you for this opportunity to offer testimony for the formal record of the public hearing held July 13, 2004 in South Plainfield, N.J. to discuss cleanup options for a portion (OU2) of the Cornell-Dublier superfund site.

1) Any contaminants left on the site will eventually be carried off the site by living things -- animals, insects, microorganisms, wind, rain, and other natural phenomena such as volatilization, convection and gravity.

The ecological risk assessment for the Cornell-Dublier site identified 40 mammals living on the site, plus some amphibians and reptiles. Insect life was not quantified. Annelids were not quantified. Other soil organisms were not quantified. But these -- and other forms of life on the site -- will all serve as vectors, moving contaminants slowly off the site. Even vegetation, growing on bare soil or through the cracks in concrete and asphalt will absorb small amounts of waste, die, and move off-site, slowly but surely carrying contaminants off the site into the surrounding areas and communities.

Contaminants left on the site today will be slowly distributed onto nearby properties, then eventually into the environment of central New Jersey in the future. Institutional controls (such as deed restrictions) and engineering controls (such as chain link fences, and asphalt paving) may slow this process, but they will not halt this process. This is the second law of thermodynamics at work, and we can slow it down but we cannot reverse it permanently. Cleaning up the site (not sweeping the toxicants under a "rug" of asphalt or concrete) is the only way to avoid continuous low-level contamination of surrounding properties.

To be blunt, contaminants that we refuse to clean up today will most likely poison someone's children tomorrow. If we are going to choose to do this, we should at least be honest about it and acknowledge what we are doing. Otherwise, the public will be misled about the nature of the choice EPA is asking them to condone, in which case the public will be exposed low levels of contaminants without anyone's informed consent -- clearly a violation of the ethical obligations of environmental professionals.

2) The risk assessment techniques that EPA uses to determine "safe" or "acceptable" levels of residual contamination have the unanticipated (but now well-understood) consequence of allowing low levels of contamination to permeate the environment. By focusing on the safety of the "maximally exposed" individual, EPA (and Foster-Wheeler) risk assessment techniques allow millions upon millions of "safe" or "acceptable" releases of industrial chemicals into the environment. The assumption is that, if the "maximally exposed" individual is not harmed, then no one will be harmed. Unfortunately, this assumption is false because it leads EPA to sanction and approve millions of small, supposedly inconsequential chemical releases -- of the kind we can expect from the Cornell-Dublier site if EPA's favored scenario is adopted. As time passes, these "inconsequential" releases add up to a serious amount of contamination.

This failure of risk assessments to protect the environment was identified and documented in 1991 by researchers at Oak Ridge National Laboratory (ORNL), who pointed out that the entire planet is now polluted by exotic industrial chemicals because of risk assessors' focus on the "maximally exposed" individual instead of on the cumulative impact of millions of small releases. See Curtis C, Travis and Sheri T. Hester, "Global Chemical Contamination," Environmental Science & Technology Vol. 25, No. 5 (May, 1991), pgs. 815-819. Available at http://www.rachel.org/library/getfile.cfm?ID=452

3) Taking into consideration points (1) and (2) above, the EPA's array of proposals for the Cornell-Dublier site is entirely inadequate because a complete cleanup of the site (to natural background levels) is not offered as an option and is therefore not considered.

4) Taking into consideration points (1), (2), and (3) above, the EPA's proposal for the Cornell-Dublier site is a violation of the basic human rights of the people of Central New Jersey. The United Nations Commission on Human Rights has declared that we all have a basic right to an uncontaminated environment. Since all the options that EPA has proposed for the Cornell-Dublier site will lead to contamination of central New Jersey in coming years, EPA's proposal violates the basic human rights of all who will be affected.

See United Nations Environment Programme (UNEP). Living in a Pollution-Free World a Basic Human Right. UNEP Press Release

2001/49. Nairobi, Kenya: United Nations Environment Programme, 2001. Available at
http://www.rachel.org/library/getfile.cfm?ID=307

5) The EPA risk assessor who responded to public comments and questions during the public meeting in South Plainfield on July 13, 2004 gave at least two false and misleading answers.

When I asked directly whether EPA had taken into consideration possible chemicals affects on the nervous system, the immune system, the reproductive system, and the endocrine (hormone) system, plus effects on growth, development, and behavior, the EPA risk assessor responded that each of those health end-points had been considered. I was told that the risk assessment available in the South Plainfield Library addressed all those health end points.

I visited the South Plainfield Public Library and examined the risk assessment in question. I have placed the risk assessment on a web site for all to see:
http://www.rachel.org/library/getfile.cfm?ID=453 (warning: it's 3 megabytes).

As we can see from page 6-23, the risk assessment specifically omits consideration of risks to the endocrine system and other biological signaling systems, and it omits reference to chemical effects on human behavior.

Therefore, the EPA risk assessor who gave the false and misleading answer to my question was either ignorant of the contents of the risk assessment, or was intentionally misrepresenting the scope of the risk assessment. Either way, this risk assessor needs to be held accountable for this serious violation of ethical standards for environmental professionals

The EPA risk assessor gave another false and misleading answer to one of my questions. I asked whether the risk assessment had taken into account the cumulative effects of mixtures of chemicals found at the site and the background levels of contaminants to which we are all routinely exposed (diesel exhaust, low levels of pharmaceutical products in drinking water, etc.).

The combined effect of many small doses is relevant because we are all exposed to numerous endocrine-disrupting chemicals at low levels via indoor air and dust. For example, see Ruthann A. Rudel and others, "Phthalates, Alkylphenols, Pesticides, Polybrominated Diphenyl Ethers, and other Endocrine-Disrupting Compounds in Indoor Air and Dust," Environmental Science & Technology Vol. 37, No. 20 (2003), pgs. 4543-4553. Available at
http://www.rachel.org/library/getfile.cfm?ID=372

(Anyone wanting to learn New Jersey-specific details about the many toxicants to which residents of New Jersey are routinely exposed should examine the New Jersey Department of

Environmental Protection's Final Report of the New Jersey Comparative Risk Project (Trenton, N.J.: N.J. Department of Environmental Protection, July, 2003), available at http://www.state.nj.us/dep/dsr/njcrp/ -- especially the appendix on human health.)

At the public meeting in South Plainfield, the EPA risk assessor asserted that the Cornell-Dublier risk assessment did take into consideration the cumulative effects of mixtures of chemicals, specifically referring to the chemicals on the site -- several different PCBs, TCE and its dechlorination products, other volatile organics, semi-volatile organics, 19 different pesticides, 23 metals, dioxins (including 2,3,7,8-TCDD) and so on.

Unfortunately, the risks of chemical mixtures cannot be reliably evaluated, and the EPA risk assessor knows -- or should know -- this. It is widely acknowledged by risk assessors and a wide range of scientists in many disciplines that risk assessments cannot take into consideration the effects of mixtures of chemicals.

See, for example, David O. Carpenter and others, "Understanding the Human Health Effects of Chemical Mixtures," Environmental Health Perspectives Supplement 1, Vol. 110 (February 2002), pgs. 25-42. Available at http://www.rachel.org/library/getfile.cfm?ID=454 For further discussion of the difficulties toxicologists face in measuring the health effects of mixtures, see Emily Monosoon, Chemical Mixtures (South Hadley, Mass.: Center of the Environment, Mount Holyoke College, Nov. 16, 2003); available at http://www.rachel.org/library/getfile.cfm?ID=455 These two publications merely scratch the surface in describing the difficulties scientists face in assessing risk of exposure to mixtures. It is unconscionable for an EPA employee to tell the townspeople of South Plainfield that the risks of exposure to mixtures have been successfully assessed for the Cornell-Dublier site. Such assurances are false and misleading.

6) Given that the Cornell-Dublier site is contaminated with numerous chemicals, EPA needs to be asking whether single-chemical estimations of hazard are adequate to protect public health and safety.

Here are references to 5 studies showing that "insignificant" amounts of several individual chemicals can combine to produce significant health effects:

Elisabete Silva and others, "Something for 'Nothing' -- Eight Weak Estrogenic Chemicals Combined at Concentrations below NOECs Produce Significant Mixture Effects," Environmental Science & Technology Vol. 36, No. 8 (2002), pgs. 1751-1756. Available at http://www.rachel.org/library/getfile.cfm?ID=371

Nissanka Rajapakse and others, "Combining Xenoestrogens at Levels below Individual No-Observed Effect Concentrations

Dramatically Enhances Steroid Hormone Action," Environmental Health Perspectives Vol. 110, No. 9 (September 2002), pgs. 917-921. Available at http://www.rachel.org/library/getfile.cfm?ID=370

Nissanka Rajapakse and others, "Defining the Impact of Weakly Estrogenic Chemicals on the Action of Steroidal Estrogens," Toxicological Sciences Vol. 60 (2001), pgs. 296-304. Available at http://www.rachel.org/library/getfile.cfm?ID=369

Joachim Payne and others, "Mixtures of Four Organochlorines Enhance Human Breast Cancer Cell Proliferation," Environmental Health Perspectives Vol. 109, No. 4 (April 2001), pgs. 391-397. Available at http://www.rachel.org/library/getfile.cfm?ID=368

Ana M. Soto and others, "The Pesticides Endosulfan, Toxaphene, and Dieldrin Have Estrogenic Effects on Human Estrogen-Sensitive Cells," Environmental Health Perspectives Vol. 102, No. 4 (April 1994), pgs. 380-383. Available at http://www.rachel.org/library/getfile.cfm?ID=367

It is noteworthy that none of these studies is cited in the bibliography accompanying the risk assessment for the Cornell-Dublier site.

7) EPA also needs to ask whether the toxicologic data, upon which its risk assessment is based, adequately represents modern toxicological science. For example, here are references to five studies showing that the timing of exposure to a toxicant is crucial to observing an effect. A particular exposure at one time in the life of an organism may produce no effect while the same exposures occuring at a different time in the life of an organism may produce a serious effect.

This means that much of the toxicological information upon which risk assessments are based is conceptually flawed, outdated and untrustworthy for making risk judgments.

See Beverly S. Rubin and others, "Perinatal Exposure to Low Doses of Bisphenol A Affects Body Weight, Patterns of Estrous Cyclicity, and Plasma LH Levels," Environmental Health Perspectives Vol. 109, No. 7 (July 2001), pgs. 675-680. Available at http://www.rachel.org/library/getfile.cfm?ID=456

See also K.S. Landreth, "Critical windows in development of the rodent immune system," Human and Experimental Toxicology Vol. 21, Nos. 9-10 (Sep-Oct, 2002), pgs.493-498 Available at http://www.rachel.org/library/getfile.cfm?ID=457

And: M.C. Garofolo and others, "Developmental toxicity of terbutaline: Critical periods for sex-selective effects on macromolecules and DNA synthesis in rat brain, heart, and liver," Brain Research Bulletin Vol. 59, No. 4 (Jan. 15, 2003), pgs. 319-329 Available at http://www.rachel.org/library/getfile.cfm?ID=458

And T.A. Lindsley and L.J. Rising, "Morphologic and neurotoxic effects of ethanol vary with timing of exposure in vitro," Alcohol Vol. 28, No. 3 (Nov., 2002), pgs. 197-203; Available at http://www.rachel.org/library/getfile.cfm?ID=459.

And: M.R. van den Heuvel and R.J. Ellis, "Timing of exposure to a pulp and paper effluent influences the manifestation of reproductive effects in rainbow trout," Environmental Toxicology and Chemistry Vol. 21, No. 11 (Nov., 2002), pgs. 2338-2347. Available at http://www.rachel.org/library/getfile.cfm?ID=460

It is noteworthy that none of these studies is cited in the bibliography accompanying the risk assessment for the Cornell-Dublier site.

In sum:

The EPA has spent large sums of money evaluating minutiae, but has missed the big picture at the Cornell-Dublier site.

1) Adequate cleanup of the Cornell-Dublier site was not even offered to the public as an option at the public hearing July 13, 2004 in South Plainfield. All of the options that EPA proposed would result in leaving substantial contamination on the site.

2) Unless the site is cleaned up to background levels, it will continue to be a source of contamination in central New Jersey and beyond. The second law of thermodynamics guarantees that low levels of contamination will continue to escape from the site onto nearby properties, then into the larger environment beyond.

3) The risk assessment technique used to determine "safe" exposures to "maximally exposed" individuals has the unintended (but now well-understood) consequence of allowing "safe" levels of contamination to enter the environment where they are joined by other amounts of toxicants that other risk assessments have deemed "safe." The cumulative impact of these low-level releases (sanctioned by the flawed risk assessment technique) is a badly contaminated environment worldwide -- but most specifically in New Jersey (more on this below).

4) EPA's (and Foster-Wheeler's) risk assessment techniques are woefully outdated and have failed to incorporate recent scientific information about the importance of timing of toxic exposures, and about the cumulative impacts of exposures to many low-level contaminants simultaneously.

5) New Jersey is already contaminated at hazardous levels and no additional contamination is acceptable. Therefore, the Cornell-Dublier site must be cleaned up entirely, leaving no residual contamination to harm future generations

According to New Jersey Department of Environmental

Protection's Final Report of the New Jersey Comparative Risk Project (Trenton, N.J.: N.J. Department of Environmental Protection, July, 2003), available at http://www.state.nj.us/dep/dsr/njcrp/

"Among the effects of various of the PCB congeners are neurodevelopmental retardation, decreased thyroxine levels, reproductive dysfunction, immune system suppression, carcinogenesis, and enzyme induction." (pg. 974)

"The likely effects of PCBs... include breast cancer, non-Hodgkins lymphomas, liver and gall bladder cancers, pancreatic cancer, decreased circulating thyroid hormone, and prenatal effects that affect postnatal neurodevelopment."

"Breast feeding transfers organochlorines from mother to infant (as much as 20-25% of prenatal maternal body burden) and results in an organochlorine intake in the range of 50-fold higher than adults on a body weight basis." (pg. 976)

[IMPORTANT NOTE: Breast feeding is still the healthiest and best way to nourish an infant.]

"As many as 2000 to 2500 cases of cancer per year may be attributable to PCBs in New Jersey. This is approximately one-third to one-half of the total incidence of breast, pancreatic and non-Hodgkins lymphatic malignancies in the state [of New Jersey]. There are however significant uncertainties in these estimates. There is also evidence that pre- and post-natal exposures to PCBs may have adverse effects on neurological development." (pg. 982)

In other words, the people of New Jersey are already exposed to an excessive quantity of PCBs -- enough PCBs to produce 2000 to 2500 cases of cancer each year.

The Cornell-Dublier site, after it is cleaned up, should not contribute one iota to this already-unacceptable situation.

6) EPA has offered no information indicating that the "engineering controls" proposed for the cleanup would endure as long as the hazards that EPA plans to leave buried on the site. EPA has offered no information indicating that humans -- using "institutional controls" -- have the ability to manage toxic sites in perpetuity (which is the duration of the hazard).

7) EPA personnel offered false and misleading answers to questions posed by the public during the public meeting July 13 in South Plainfield. This is a violation of professional ethics and should be investigated by the EPA Inspector General. By way of this testimony for the public hearing record, I am formally requesting such an investigation.

8) I request that in future EPA put all documents related to this site on the world wide web to make "public participation" as easy as it should be, and as easy as EPA says it wants it to

be.

9) At the Cornell-Dublier site, which offers such a clear example of a site that will continue to release toxicants into the environment for decades (perhaps aeons) to come, EPA has an opportunity to "turn the corner" and set a wonderful new example in the history of site cleanups. A precautionary approach, instead of a flawed risk assessment approach, would dictate a much more aggressive and thorough cleanup of the site than EPA has considered up to this point. (A precautionary approach to site cleanups is discussed in the draft paper found here: http://www.rachel.org/library/getfile.cfm?ID=363 .)

Thank you for this opportunity to offer testimony for the public record.

(signed)
Peter Montague, director
Environmental Research Foundation
P.O. Box 160
New Brunswick, N.J. 08903
Tel. 732-828-9995

E-mail peter@rachel.org dublier.doc

Battelle

The Business of Innovation

September 3, 2004

via Federal Express and e-mail

Mr. Peter Mannino
Project Manager
Emergency & Remedial Response
U. S. Environmental Protection Agency
Region II
290 Broadway, 19th Floor
New York, NY 10007-1866

Re: Submission of Comments by the Hamilton Industrial Park Group with respect to EPA's Proposed Plan for Operable Unit No. 2 ("OU2"), Hamilton Industrial Park Site, South Plainfield, New Jersey

Dear Mr. Mannino:

On behalf of Cornell-Dubilier Electronics, Inc. and Dana Corporation (together the "Hamilton Industrial Park Group" or "HIPG"), I am submitting to you for inclusion in the Administrative Record comments with respect to EPA's Proposed Plan for OU2 at the Cornell-Dubilier Electronics Site ("Hamilton Industrial Park Site") dated July, 2004. These comments are organized so as first to provide a review of EPA's Preferred Alternative, and then to suggest other remedial alternatives which the HIPG believes are equally or more protective of human health and the environment; comply with ARARs; better satisfy EPA's remedy selection criteria, can be implemented more expeditiously; and are significantly more cost-effective.

The HIPG was encouraged by John Prince's comments during the recent consultation meeting in New York City, when he indicated that remedial considerations relating to the Hamilton Industrial Park Site were complex and that EPA, while publishing its Preferred Alternative, was not necessarily committed to that remedial outcome. Rather, the purpose of the Proposed Plan was to solicit detailed input and suggest possible alternatives for more successfully addressing the OU2 remedial objectives. A similar, open approach to considering remedial alternatives for OU2 was discussed during the subsequent public meeting held in South Plainfield on July 13, 2004.

Given this invitation by EPA for detailed input, we have carefully supported the enclosed comments with references to published studies and other documents, in many cases using sources directly generated by EPA. We believe that this documentation, which provides comprehensive support for our comments and recommendations, should prove helpful to EPA.

Finally, to facilitate a comparison of EPA's Preferred Alternative with the alternative that we believe offers substantially greater benefits and conforms better to EPA's remedy selection criteria, we are providing a color-coded summary table entitled "Comparative Analysis of Soil Remedial Alternatives." This summary table provides a brief narrative discussion of how each alternative performs relative to EPA's nine remedy selection criteria, overlain by an intuitive color code (blue for "not applicable," green means "best meets criteria", yellow means "may meet criteria" and red to illustrate "least meets criteria").

Consistent with the HIPG's past practice, we would be pleased to discuss with EPA our comments and to answer any questions that you may have with respect to them.

Sincerely,

On behalf of the Hamilton Industrial Park Group

J. Mark Nielsen, P.E.

cc: Sarah P. Flanagan, Esq., USEPA
Robert Sanoff, Esq., Foley Hoag (617-832-1152)
Kim Stollar, Esq., Foley Hoag (617-832-1218)
Michael Last, Esq., Rackemann, Sawyer & Brewster (617-951-1192)

COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES

Comparative Analysis of Soil Remedial Alternatives

The following comparative analysis focuses upon the relative performance of three remedial alternatives for contaminated soil at the Hamilton Industrial Park Superfund Site. The evaluation uses the same nine evaluation criteria specified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) for detailed analysis in the Feasibility Study (FS).

The nine FS evaluation criteria and additional details regarding specific points of analysis under each criterion are set forth in the NCP at 40 CFR §300.430 (e)(9)(iii)(A)-(I). The comparative analysis and evaluation criteria are further detailed in Sections 6.2.2 through 6.2.5 of EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final," OSWER Directive 9355.3-01, October 1988 (the RI/FS Guidance).

As discussed in the RI/FS Guidance, the comparative analysis of the remedial alternatives can involve both qualitative and quantitative analysis under each evaluation criterion. This Summary provides a brief narrative or numeric discussion of how the remedial alternative being analyzed performs against a specific evaluation criterion. The color code is used to visually illustrate (see "Analysis Color-Coding Key" below) the performance of each remedy against each evaluation criterion.

Analysis Color-Coding Key:

Not applicable	**Best meets criterion**	**May meet criterion**	**Least meets criterion**

Abbreviations used in this comparative analysis include:

RI/FS = Remedial Investigation / Feasibility Study
PCBs = Polychlorinated biphenyls
VOCs = Volatile Organic Compounds
S/S = Solidification/Stabilization
GAC = Granular Activated Carbon
LTTD = Low Temperature Thermal Desorption
PRP = Potentially Responsible Party
HIPG = Hamilton Industrial Park Group (two of the PRPs)

CERCLA = Comprehensive Environmental Response, Compensation and Liability Act
CFR = Code of Federal Regulations
NCP = National Oil and Hazardous Substances Pollution Contingency Plan
RCRA = Resource Conservation and Recovery Act
LDRs = Land Disposal Restrictions (one of the RCRA requirements)
TSCA = Toxic Substances Control Act
ARARs = Applicable or Relevant and Appropriate Requirement
ppm = parts per million or milligrams per kilogram

500401

Summary of Comparative Analysis of Soil Remedial Alternatives

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards^3 of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards^3	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards^3
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards^3 of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	

Remedy Evaluation Criterion No. 1 - Overall Protection of Human Health and the Environment

Overall Evaluation	Not Protective	Most Protective	Potentially Protective

NOTE: This criterion summarizes the overall comparative analysis of the three alternatives, based on the detailed evaluation summarized in the following tables.

Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards^3 of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards^3	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards^3
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards^3 of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	
Remedy Evaluation Criterion No. 2 - Compliance with Applicable or Relevant and Appropriate Requirements			
Overall Evaluation	Not applicable	Best meets Criterion	Best meets Criterion
Points of Evaluation:			
Does this remedy meet chemical-specific ARARs (i.e., TSCA, RCRA LDRs)?	Not applicable	Yes; through appropriate design	Yes; through appropriate design
Does this remedy meet location- and action specific ARARs?	Not applicable	Yes; through appropriate design	Yes; through appropriate design

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Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards^3 of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards^3	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards^3
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards^3 of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	
Remedy Evaluation Criterion No. 3 - Long-Term Effectiveness			
Overall Evaluation	Fails to meet Criterion	Best meets Criterion	May meet Criterion
Points of Evaluation:			
What risk remains after treatment?	No action = unabated risk	Capacitor excavation and redevelopment cap eliminates direct exposure pathway and significantly reduces mobility to groundwater; acceptable risk-based PCB levels remain in stabilized and capped soils	Capacitor excavation and redevelopment cap eliminates direct exposure pathway and significantly reduces mobility to groundwater; low level PCBs remain in treated soils, and at acceptable risk-based levels in capped soils
		Post-treatment capping eliminates direct contact and leaching based risk pathways	Post-treatment capping eliminates direct contact and leaching based risk pathways
Are there slightly less effective options posing substantially less risk?	Not applicable	Lowest overall risk. However, alternative would be protective	Yes, in-situ S/S process inherently less risky than excavation and LTTD
What is the magnitude of risk remaining from residuals remaining at the site when the remedy is completed?	Not applicable	Risk is reduced to protective levels through treatment. More PCB mass left on site with S/S, but the risk is reduced to acceptable levels and exposure pathways are eliminated through S/S, engineering and institutional controls	Removes more PCB mass from the site. Risk is reduced through treatment, coupled with institutional and engineering controls
How adequate and reliable are long-term engineering and institutional controls necessary to manage residuals?	Not applicable	Long-term engineering and institutional controls are an integral part of future site development, and are both adequate and reliable when properly maintained	Long-term engineering and institutional controls are an integral part of future site development, and are both adequate and reliable when properly maintained
What is likelihood that technology will meet performance standards within budgets and time goals?	Not applicable	Highly likely; robust and well understood technology; significant CERCLA experience of success with S/S	Low likelihood; complex technology (especially when daily operations are restricted). Significant technical, regulatory, and public concerns can lead to delays and budget overruns
Can this technology achieve 90-99% reduction in the concentration or mobility of contaminants?	Not applicable	Yes. Demonstrated at >160 CERCLA sites (including 35 sites with PCBs), with >140 completed	Yes, demonstrated at >50 CERCLA sites (including 14 with PCBs). If incineration used for off-gas treatment, 99.9999% Destructive / Removal Efficiency for PCBs must be demonstrated, which requires >2,200 °F and >2 seconds residence time. Alternatively, the PCBs can be condensed back into oils, then transported for off site incineration
Does this technology offer better performance, implementability, lower risk or cost than others?	Not applicable	Equivalent performance, better implementability, lower risk and significantly lower cost than LTTD	Equivalent performance, less implementable, higher risk and significantly higher cost than S/S

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Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards^3 of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards^3	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards^3
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards^3 of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	

Remedy Evaluation Criterion No. 4 - Reduction in Toxicity, Mobility, or Volume			
Overall Evaluation	Fails to meet Criterion	Best meets Criterion	May meet Criterion
Points of Evaluation:			
Is treatment used to address principal threats and reduce inherent hazards at the site?	No	Yes, principal threats are addressed through treatment	Yes, principal threats are addressed through treatment
Are there any special requirements for this treatment process?	Not applicable	No, technology readily available. Site-specific bench and demonstration of design testing required	Yes, specialized LTTD unit needed for prolonged period based on EPA's assumed limited operating hours and through-put
What percent of the contaminant mass is removed or destroyed?	None	100% of capacitor area PCB and VOC mass removed; remaining mass immobilized in place by S/S treatment	100% of capacitor area PCB and VOC mass removed; LTTD removes ~90-99% of PCBs and VOCs during treatment
To what extent is the mobility reduced?	None	Mobility of PCBs, VOCs and metals eliminated through S/S and Redevelopment Cap	Mobility of PCBs and VOCs eliminated through LTTD and Redevelopment Cap; metals may require follow-on S/S to become immobilized
To what extent is the toxicity reduced?	None	No change for PCBs and metals in matrix. However, exposure pathway removed through treatment and capping	No change for what remains; fewer contaminants left on site after LTTD and/or excavation. However, some treatment residuals must be managed off-site
To what extent is treatment irreversible?	Not applicable	S/S process is irreversible	LTTD and excavation processes are irreversible
What type of residuals will remain after treatment is completed?	Not applicable	Contaminants will be sorbed, then encapsulated in a soil/cement matrix. Solidified mass well suited for use as foundations.	LTTD will remove natural organics and moisture, metals may be more leachable in treatment residual. Material suitable for foundations after sufficient compacting and/or follow-on S/S
Is this technology currently technically feasible to implement at full-scale?	Not applicable	Yes, in-situ S/S remedies average 99,000 yards^3 with remedies up to 1,071,000 yards^3 implemented successfully	Yes, LTTD remedies to date average 32,400 yards^3, with the largest to date for PCBs being 54,000 yards^3
Is this technology currently technically practicable to implement at full-scale?	Not applicable	Yes, S/S remedies over 100,000 yards^3 implemented successfully at other sites	Yes, but 8-10 hour per day operation assumed by EPA is inconsistent with cost effective operation
Will implementing this technology result in posing greater overall risk to workers or the surrounding community than other, less effective methods?	Not applicable	No, lowest risk approach for workers and the community	Yes, highest risk option; due to the need to fully excavate, then screen, LTTD feed to remove anything >2", air emissions, the potential for vapor treatment failure, and the potential to generate dust during materials handling
Could severe effects across environmental media result from implementing this remedy?	Not applicable	No, low[illegible] approach. S/S improves reuse potential by producing solid matrix	Yes, there will be exhaust emissions, and there is some potential for air emissions during LTTD system excursions. Treatment residual requires more extensive compaction, and may need S/S prior to reuse under buildings

Hamilton Industrial Park
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South Plainfield, NJ

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards^3 of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards^3	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards^3
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards^3 of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	

Remedy Evaluation Criterion No. 5 - Short-Term Effectiveness

Overall Evaluation	Not applicable	Best meets Criterion	Least meets Criterion
Points of Evaluation:			
What short-term risks are posed to workers and the community during implementation?	Not applicable	Lowest risk, similar to typical heavy construction	Highest risk due to potential for vapor and stack emissions; hot soil; complete excavation and backfilling will involve more heavy construction equipment for longer duration than S/S
Can these risks be reliably mitigated?	Not applicable	Yes, conducting remedy in-situ reduces potential for exposure of workers and to the surrounding community	May be mitigated through covers, controls, and worker PPE. However, adding controls increases complexity, potential for failure, and costs
What environmental impacts are associated with construction and implementation?	Not applicable	Lowest impact, S/S results in suitable foundation material	Total excavation may result in vapor emissions; LTTD releases combustion by-products; treated soils require compaction and possibly follow-on S/S prior to capping and reuse to address leachable metals
When will the design and implementation of the remedy be completed? What is the potential for the completion of the remedy to be significantly delayed?	Not applicable	Unknown, but significant basis of S/S experience suggests at least one design step could be eliminated. Based on experience at other CERCLA sites, construction delays not expected to be significant	Unknown, but significant basis of LTTD experience suggests detailed multi-step design process needed. Performance testing and materials handling issues expected to create delays during construction
What are the potential impacts of the remedy on natural resources?	Not applicable	Least use of natural resources; S/S uses conventional construction equipment, cement, carbon and other reagents in process	~5,000 hours of LTTD operation @ 40 MM BTU/hour = equivalent to power used in one year by ~5,500 typical houses
Estimates of Air Pollutants released by burning ~197,000,000 cubic feet of natural gas during LTTD; does not include other utilities or construction equipment emissions:			
Pounds Carbon Dioxide (CO_2)	Not applicable	0	23,600,000
Pounds Nitrogen Oxides (No_x)	Not applicable	0	400
Pounds Particulate (Total, <1.0 micron)	Not applicable	0	1,500
Pounds Sulphur Dioxide (SO_2)	Not applicable	0	100
Pounds Unburned Hydrocarbons	Not applicable	0	1,100

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Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards³ of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards³	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards³
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards³ of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	
Remedy Evaluation Criterion No. 6 - Implementability			
Overall Evaluation	Not applicable	Best meets Criterion	Least meets Criterion
Points of Evaluation:			
What difficulties may be associated with this remedy?	Not applicable	None expected; known and demonstrated technology. Potential for use of additional reagent for more highly impacted materials; potential for issues if S/S equipment encounters obstructions	Some expected difficulties include [illegible] permitting, trial burn acceptance; materials handling issues; equipment breakage due to excessive thermal cycling; treatment issues due to high organics, clay, BTU of high moisture content materials; control of fugitive emissions, etc.
What uncertainties are related to the construction of this remedy?	Not applicable	Uncertain extent of excavation and sorting of debris in upper 3' of media, unknown potential to encounter obstructions during S/S	Unknown extent of excavation, shoring approach or how materials will be segregated; air emissions; whether LTTD will meet treatment standards; materials handling; extent of backfill compaction necessary; etc
What is the likelihood that technical problems will lead to schedule delays and cost overruns	Not applicable	Low likelihood; mostly associated with in-situ equipment encountering boulders or obstructions	Probable; equipment and materials handling issues likely; trial burn and public concerns likely
What is the likelihood that administrative (permitting or public) problems will lead to schedule delays and cost overruns?	Not applicable	Low likelihood; demonstration of design testing required, not expected to pose delays	High likelihood; need for performance testing of LTTD equipment increases probability for delays due to equipment modifications, which increases potential for cost overruns
Is this technology generally available, reliable, and sufficiently demonstrated for this specific application?	Not applicable	S/S is one of most common CERCLA remedies used to date, significant track record of success	Limited number of vendors available, technology sufficiently demonstrated, but with record of delays and cost increases
Will this technology require further development before it could be applied full-scale at this site?	Not applicable	No. However, bench and demonstration of design testing required	No. However, bench and substantial performance testing required
Are sufficient vendors available to obtain competitive pricing?	Not applicable	Yes, many S/S vendors available	No. Few LTTD vendors available for long-duration projects with restricted operating hours - which limits competition.
Have available vendors met target remedial, performance and cost goals at similar sites?	Not applicable	Yes, long track record of success at similar sites	No, established record of delays and cost over-runs, however, treatment typically effective

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Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap	
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards³ of principal threat material		
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards³	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards³	
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards³ of soils and debris; and LTTD residuals	
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls		
Remedy Evaluation Criterion No. 7 - Total Costs				
Overall Evaluation	Not applicable	Best meets Criterion	Least meets Criterion	
Points of Evaluation:				
Source of Cost Estimate:		HIPG Cost Estimate (based on vendor estimates and demonstrated costs)	EPA Proposed Plan Estimate	HIPG Estimate of EPA Plan Costs (based on demonstrated costs)
Total Direct Construction Costs (TDCC):	Not applicable	$15,800,000		$49,000,000
Contingency, Engineering and Construction Management, Legal and Administrative and Location Specific Adders:	Not applicable	$8,500,000		$26,500,000
Present Worth Operations and Maintenance Costs:	Not applicable	$11,300,000		$11,300,000
Total Cost (Rounded) :	Not applicable	$35,600,000	$62,000,000	$86,800,000

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Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards[3] of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards[3]	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards[3]
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards[3] of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	

Remedy Evaluation Criterion No. 8 - Community Acceptance

Overall Evaluation	Fails to meet Criterion	Best meets Criterion	Least meets Criterion
Points of Evaluation:			
Does this approach result in reuse of the site as soon as possible?	Not applicable	S/S process readily integrated with redevelopment schedule; remedy construction could be completed within 3 years	LTTD process likely to cause delays in redevelopment schedule; remedy construction could take at least 10 years to complete
Could this approach result in the emission of contaminant dusts or vapors?	Not applicable	Lowest overall risk approach; potential for emissions during targeted excavation, and from materials handling during screening of debris from upper 3', cement dust must be controlled during S/S	Highest overall risk; complete site excavation and ex-situ handling could create substantial dust and odors, unless adequately controlled. Longer term operation increases number of potential system upsets and pollutant releases
Does this remedy result in significant noise?	Not applicable	Both options create noise, S/S process uses conventional construction equipment which generates noise	Both options create noise, LTTD process will use more construction equipment than S/S, as complete site excavation is needed prior to treatment and backfilling
Does this remedy involve significant truck traffic in the area of the Site?	Not applicable	Yes, there will be up to 1,100 truck trips during off-site disposal of capacitor waste. Up to ~1,600 truck trips to deliver S/S reagents (cement, GAC, etc.) used during the remedy. The additives used in the S/S treatment process increase the soil volume (an estimated 1.5 feet increase in grade over the assumed 5 acre treatment zone). This added volume can be used to backfill the excavation and/or to establish grades consistent with future redevelopment	Yes, there will be up to 1,100 truck trips during off-site disposal of capacitor waste, with [illegible] truck trips hauling backfill. There will be a further [illegible] truck trips removing wastes not suitable for LTTD with another [illegible] truck trips hauling backfill. In addition, if condensation is used instead of incineration for desorbed PCBs, there could be up to twenty-eight tank trucks ([illegible] gallons each) of condensed PCB oil taken offsite for incineration during this remedy.
Does this remedy result in the emission of significant quantities of air pollutants?	Not applicable	No, excavation and S/S process uses conventional construction equipment	Excavation and materials handling uses more conventional construction equipment for a longer duration than S/S. LTTD requires combustion of significant quantities of natural gas, and release of associated air pollutants.

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Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Media Addressed in this Alternative:	S-1 - No Action	HIPG Suggested Alternative (Modified S-4) Excavate + Off-Site Disposal + S/S + Cap	EPA's Preferred Alternative (Combined S-3/S-5) Excavate + Off-Site Disposal + LTTD + Cap
Principal Threat Material - Capacitor disposal area	No action	Excavation and off-site disposal of 7,500 yards[3] of principal threat material	
Principal Threat Material - Soils >500 ppm PCBs and/or VOCs		In-Situ Solidification/Stabilization (S/S) of 107,000 yards[3]	Excavation and Low Temperature Thermal Desorption (LTTD) of 53,500 yards[3]
Additional Off-Site Disposal		Off-site disposal of debris segregated from upper 3' of soil	Excavation and off-site disposal of 53,500 yards[3] of soils and debris; and LTTD residuals
Treated principal threat material; and all other soils >2 ppm PCBs		Redevelopment Capping and Institutional Controls	
Remedy Evaluation Criterion No. 9 - Agency Acceptance			
Overall Evaluation	Fails to meet Criterion	Best meets Criterion	May meet Criterion
Points of Evaluation:			
Does this remedy address Principal Threats?	No	Yes	Yes
Does this remedy use treatment to address Principal Threats?	No	Yes	Yes
Date "Construction Completion" Achieved?	Not applicable	S/S process readily integrated with redevelopment schedule; remedy construction could be completed within 3 years	LTTD process likely to cause delays in redevelopment schedule; remedy construction could take at least 10 years to complete

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COMMENTS ON THE SUPERFUND PROGRAM PROPOSED PLAN
HAMILTON INDUSTRIAL PARK SITE
DATED JULY 2004

COMMENTS ON THE SUPERFUND PROGRAM PROPOSED PLAN
HAMILTON INDUSTRIAL PARK SITE
DATED JULY 2004

Prepared on behalf of the Hamilton Industrial Park PRP Group
for Submittal to
USEPA Region II

Prepared by

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September 3, 2004

INDEX

I. Introduction

In July 2004, the United States Environmental Protection Agency (EPA) released for public comment its Proposed Plan for Operable Unit 2 (OU2) at the Hamilton Industrial Park Superfund Site (the "Site"). EPA's Proposed Plan for on-Site soils consists primarily of off-site disposal coupled with on-Site low temperature thermal desorption. However, when measured against the standards required to be considered under the National Contingency Plan (NCP) and EPA's own remedy selection guidance, the Proposed Plan cannot withstand scrutiny. Simply put, the Proposed Plan for on-Site soils recommends the wrong remedial action.

EPA's Proposed Plan is impractical to implement and will entail unnecessary risk, delay and cost. Although EPA characterizes its remedy as involving "low temperature" thermal desorption, a genuinely low temperature remedy cannot desorb high boiling point PCBs from soils. To cause PCBs to desorb from soils requires a high temperature remedy. Such a high temperature remedy carries the risk of converting PCBs into far more hazardous substances such as dioxins and furans. Moreover, thermal desorption at high temperature will create significant additional risks to the local community from noise, dust, and odors. Indeed, the approach selected in the Proposed Plan would result in approximately 20,500 separate truck trips through the local community -- many of which would be hauling the most highly contaminated soils and debris identified by EPA for removal from the Site. Because EPA has not properly characterized its proposed remedy as involving high temperature thermal desorption, EPA has not adequately given notice of its plans to the community and the public sufficient to comply with notice and public comment requirements under CERCLA and the National Contingency Plan.

Even if it were possible to desorb PCBs from soils using low temperature thermal desorption, EPA has failed to take into consideration the evidence from the Remedial Investigation report documenting soil characteristics and large quantities of debris that would hinder effective use of thermal treatment and will likely create significant additional risks. Debris and rocks must also be screened out, removed and further managed prior to thermal desorption of the screened residuals. Other soils, containing the highest levels of PCB and VOC contamination and mixed with debris, will have to be excavated and transported for off-site disposal, creating additional risk to the local community and on-site workers. Further, EPA's proposal to run its thermal desorption operation only during daylight hours is unrealistic given that part-time operation of the thermal equipment will significantly impair its efficiency and greatly extend the duration of the thermal operation.

EPA's Proposed Plan ignores the available information about the Site and about the technology of thermal desorption -- much of which EPA itself has gathered or published. Although EPA claims that thermal desorption is a "treatment" remedy, that is not the case. As EPA explicitly recognized in its 1997 guidance, "[t]hermal desorption is a physical separation process, not a destruction technology" (USEPA, 1997). Presumably, after completing thermal desorption of contaminated soils at the Site, the remedial action will include steps to dispose of or destroy the PCBs which have been separated from those soils. The Proposed Plan, however, fails to identify what will happen to the separated PCBs or to discuss the risks and costs associated with the ultimate treatment of the PCBs.

Also troubling is EPA's estimate of the cost of thermal desorption at the Site. Specifically, in the OU2 Feasibility Study on which EPA bases its Proposed Plan, EPA utilizes a unit cost for thermal desorption of $101 per ton (it is noted that EPA did not provide documentation for this unit cost). Significantly, EPA itself has acknowledged that thermal desorption is less efficient and substantially more expensive when PCB soils are involved (USEPA, 2001). Indeed, at other Superfund sites where EPA has utilized thermal desorption, the treatment cost per ton has been significantly higher than EPA's assumed $101 per ton -- higher by a factor of up to 400%.

In the end, EPA's Proposed Plan will result in an OU2 remedy that is likely to take six or more years to implement; is likely to cost in the range of $90 million; and will be extremely difficult to implement without enormous delays in time, increases in risk to the local community, and significant noise and odor problems. In marked contrast to the remedy EPA proposes, at least two alternative remedies which will also be protective of health and the environment, are permanent, will be easier and faster to implement, and are substantially less expensive, were overlooked by EPA. The first alternative remedy is the one proposed by the HIPG to the National Remedy Review Board (the "NRRB") in a letter dated July 16, 2003. That remedy had the following elements:

- Excavation and off-site disposal of principal threat material, including the material within the capacitor/debris disposal area which represents the primary source of principal threat material (both PCBs and VOCs).

- Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.

The second alternative remedy, which is described in greater detail in Section III of this document, is based on solidification and stabilization and has the following elements:

- Targeted excavation and off-site disposal of principal threat material within the capacitor disposal area, which constitutes the primary source of principal threat material (both in terms of PCBs and VOCs).

- Separation of debris from those soils in other areas of the Site having contaminant concentrations constituting principal threats. Soils generated from the debris separation process will be placed back in the treatment area, and the separated debris will be segregated and disposed of off-site.

- Treatment by means of in-situ solidification/stabilization (S/S) of soils having contaminant concentrations constituting principal threats. In areas where principal threat levels are limited to the shallow soils or cannot otherwise be treated in-situ (e.g., floodplain soils), these surface soils will be consolidated on-site into the larger area(s) which are subject to treatment. In addition, soils in designated clean utility corridors for purposes of Site redevelopment will be removed and consolidated prior to treatment.

- Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.

The Hamilton Industrial Park PRP Group, consisting of Cornell-Dubilier Electronics, Inc. and Dana Corporation, submits these comments documenting (1) that EPA's Proposed Plan recommends a remedial alternative for OU2 which does not comply with the standards of the NCP and EPA's guidances, and (2) that EPA has overlooked the most appropriate remedial actions for OU2.

In order to provide an expert review of EPA's Proposed Plan, the HIPG retained the Battelle Memorial Institute (Battelle) and *de maximis, inc.* (de maximis), which together have substantial field experience designing and implementing all of the remedial technologies evaluated by EPA in the OU2 Feasibility Study. Based on a careful review the Site-specific data and consideration of the experience with these technologies, the evaluation conducted by Battelle and de maximis has raised serious concerns. It has also lead the HIPG to recommend alternative remedies which better meet the EPA's own remedy selection criteria. The specific comments on EPA's Proposed Plan are provided in Section II. A discussion of the HIPG's recommended alternatives is provided in Sections III and IV. Finally, Section V incorporates the HIPG's prior comments to EPA on EPA's proposed remedial action objectives, including characterization of principal threat material for OU2.

II. Evaluation of EPA's Preferred Remedy

A. Overview of Comments on the EPA's Proposed Plan

EPA's proposed "Low Temperature Thermal Desorption" (LTTD) based remedy is neither low temperature nor complete treatment, understates potential costs and environmental and health risks, and overstates the likely implementability of the Preferred Remedy.

The remedy recommended in EPA's Proposed Plan is incorrectly characterized as a low temperature treatment system and based on the characteristics of the contaminants to be treated will in fact require high temperature treatment. In addition, EPA's stated intent to have the system operate on a cyclic basis, i.e. only 8-10 hours per day to address community concerns, will create enormous implementability problems and will make it difficult to achieve necessary operational efficiencies in the desorption equipment and the associated pollution control equipment. These implementability issues, coupled with the specific challenges at the Site – most importantly EPA's decision to treat by means of desorption the highest levels of contaminants which it recognizes will be least likely to desorb effectively or will present significant handling issues – increases the potential risks to workers and the community, including the potential formation and/or release of dioxins, furans and other hazardous constituents.

Additionally, thermal desorption will cost far more than assumed by EPA. If EPA used the thermal desorption unit treatment cost reported by EPA for other National Priority List (NPL) Sites where PCBs have been treated, the cost for the Preferred Alternative would increase by more than $25 million. Moreover, the time period for completion of thermal desorption-based remedy is likely to be significantly longer than that estimated in the Proposed Plan, further increasing the estimated costs.

Some of the principal concerns with the Proposed Plan are:

- Genuinely "low" temperature thermal desorption will not work at the Site. Thermal desorption (TD) is typically assumed to occur between 200-1,000 °F. While the break point between "low" and "high" is not defined by EPA, "low temperature" is generally considered to range from 200-600 °F (appropriate for petroleum hydrocarbons and VOCs), with "high temperature" occurring between 600-1,000 °F (appropriate for PAHs, PCBs and pesticides). The PCBs at the Site have boiling points ranging from 689-734 °F for Aroclor 1254, and from 725-788 °F for Aroclor 1260, which would suggest a reasonable minimum target treatment temperature of 800 °F. This is clearly at the "high" end of the temperature range, thereby constituting high temperature thermal desorption (HTTD).

- Higher temperature thermal desorption is likely to generate more toxic hazardous substances, since dioxins and furans are formed when PCBs and particulates are maintained in the 400-650°F temperature range. This will occur if soils and/or treatment residuals are inadequately or unevenly heated/cooled.

- Contrary to EPA's assertion, the Proposed Plan does not result in complete "treatment as a principal element". Thermal desorption ("TD") is a separation remedy; it is not a destruction technology. Thermal desorption simply uses heat to evaporate and separate the PCBs from soils. The off-gassed PCBs must then either be condensed and incinerated off-site, or be incinerated on-site in a secondary combustion chamber attached to the TD. EPA's Proposed Plan does not state how EPA intends to handle the condensed PCBs. To the extent that the Proposed Plan contemplates on-site incineration of the condensed PCBs, EPA has not addressed either the delay in obtaining the necessary permit equivalency under the Toxic Substances Control Act or the impact to the local community of having such an incineration facility at the Site with its concomitant problems of particulate control and the troubling risk that treatment residuals (e.g. furans and dioxins) from incineration will be more toxic than the original waste. To the extent that the Proposed Plan contemplates off-site incineration, EPA has not addressed the costs and risks associated with the handling, transportation, and off-site incineration of the condensed PCB liquids.

- The OU2 Feasibility Study recognizes that much of the highly contaminated and, therefore, highest risk soils are not likely to be suitable for TD because of debris mixed in the soils. Thus, EPA's Proposed Plan assumes that approximately one-half of the 107,000 cubic yards of principal threat soils, i.e. 53,500 cubic yards, will not go into the thermal unit, but instead will be transported off-site through the South Plainfield community. This approach is inconsistent with EPA's recognition that excavation and transportation off-site of such a large volume of soil presents high short-term risks (see the Proposed Plan at page 19).

- Thermal Desorption poses significant implementability problems at the Site. First, EPA's proposal to limit operation of the thermal desorption system to daylight hours is unrealistic. Thermal desorption equipment and its associated pollution control equipment are designed to run efficiently on an around-the-clock basis. To stop and start the system every day would grossly impair the system efficiency and add years to the duration of the operation. Second, the debris mixed in with the contaminated soils will limit the soils which can actually be put into a thermal desorption system. Third, EPA has not fully addressed the significant noise and odors which will be caused by the operation of a thermal desorption system, particularly since it is likely that the system will have to be operated on a 24 hour basis.

- EPA has not fairly estimated the likely cost of a thermal desorption system at the Site. EPA's characterization of LTTD, combined with excavation, as being "cost effective ... [with] a comparable cost to other alternatives" is not accurate in light of EPA's own reported costs for TD at other PCB-contaminated NPL Sites, as well as the complexities specifically affecting the Site. EPA uses a TD treatment cost of $101 per ton when EPA's experience at other Superfund sites involving PCB contaminated soils is significantly higher. Such circumstances would add $25 million or more when appropriate allowances for expected Site-specific issues are taken into account (see also Section II.D and Appendix A of these comments). This cost differential could be significantly higher if the thermal operation is in fact limited to 10 hours per day, or if additional handling or treatment of thermal treatment residuals is required.

- EPA's Proposed Plan incorrectly characterizes the ability of thermal desorption to "allow the property to be used for the reasonably-anticipated future land use" (see the Proposed Plan at page 21). Assuming that EPA only uses the thermal desorption unit 8 to 10 hours per day as described in the Proposed Plan, and no operating problems are encountered, the actual TD portion of the Site remedy will take at least 2.8 years. Coupled with the detailed design and performance testing associated with the TD process, the earliest date that the Site could be ready for redevelopment would be at least 6 years in the future using EPA's 20 tons per hour throughput rate, with a more likely remedy completion date in excess of 10 years when more realistic treatment throughput scenarios are used. However, even this schedule is optimistic, since EPA's proposed operating scenario is precisely the mode of operation that is most likely to create mechanical problems with the TD system.

The specific comments on EPA's Proposed Plan are provided below.

B. Thermal Desorption of On-Site Soils Requires Higher Temperatures Than Indicated in the Proposed Plan; is Not "Treatment" of PCBs Under the NCP; and Poses Significant Implementability Risks and Challenges

EPA has incorrectly identified the thermal desorption technology that applies to the Site as being "low temperature". In point of fact, the proposed use of low temperature, rather than high temperature thermal desorption for portions of the PCB and chlorinated VOC-impacted soils would not achieve the remedial goals articulated in the Proposed Plan.

Thermal desorption is a process through which contaminants typically are heated to a temperature exceeding their respective boiling points; this process physically separates or "desorbs" contaminants from the soil. The process is generally broken down into two types of remedial technologies: low temperature thermal desorption (LTTD) and high temperature thermal desorption (HTTD). According to the Federal Remedial Technologies Roundtable (FRTR)[1], *Remediation Technologies Screening Matrix and Reference Guide, Version 4.0*[2], a group in which EPA participates, it is *high temperature* desorption, not low temperature, that is the relevant thermal desorption technology for high molecular weight PCBs such as those found at the Site. LTTD typically only heats contaminated media to temperatures ranging from 200° F to 600° F and is used most often for remediating petroleum hydrocarbon contamination and other contaminants having lower boiling points.

[1] The Federal Remediation Technology Roundtable (FRTR) was established in 1991 as an interagency committee to exchange information and to provide a forum for joint action regarding the development and demonstration of innovative technologies for hazardous waste remediation.

[2] See http://www.frtr.gov/ matrix2/section4/4-26.html.

Sites using thermal desorption to address PCB-contaminated soils generally employ significantly higher temperatures than those typically characterized as "low temperature". In fact, most sites contaminated by higher molecular weight compounds employed temperatures generally ranging from 600° F to 1,000° F. Unfortunately, EPA does not appear to have adequately considered the conditions specific to this Site, notably the fact the PCBs at the Site have boiling points ranging from 689-734 °F for Aroclor 1254, and from 725-788 °F for Aroclor 1260. Such boiling points for the site-specific contaminants would suggest a reasonable minimum target treatment temperature of 800 °F, clearly at the "high" end of the temperature range.

Treatment of off-gases differs significantly from LTTD to HTTD, in that the off-gassed hydrocarbons and VOCs from the LTTD process can be readily treated by catalytic or thermal oxidation. On the other hand, as TD simply uses heat to evaporate and separate the PCBs from the soils, the off-gassed PCBs must then either be condensed and transported off-site for incineration or incinerated on-Site in a secondary combustion chamber attached to the TD. On-Site incineration of off-gassed PCBs will require a "trial burn" to demonstrate the required 99.9999% Destruction/Removal Efficiency for PCBs specified under the Toxic Substances Control Act. Combustion temperatures of approximately 2,200 °F for greater than a 2 second residence time are required to meet this requirement. This demonstration typically presents up to a year delay in remedy implementation due to permit equivalency issues.

Finally, and of significant concern from the perspective of public health and perception, there is a real risk that thermal desorption will create treatment residuals more toxic than the original waste. Unlike the case with non-thermal technologies, TD must be carefully and effectively managed so as not to create dioxins and furans, which are formed when PCBs and particulates are maintained in the 400-650°F temperature range, such as (1) when TD units have a bag house after the primary or desorption chamber; or (2) when heat transfer surfaces (such as boilers or heat exchangers) are present. As previously noted, TD units using off-gas incineration must use some form of bag house for particulate control, and those using condensation must have heat exchangers to cool the gases.

These concerns about the limitations of LTTD arise from the experience at other NPL sites, including Outboard Marine Corporation, ReSolve, Wide Beach Development and the Industrial Latex Sites. In addition, thermal desorption of PCBs was considered and then abandoned due to insufficient soil characterization and inefficient treatment at the Universal Oil Products Site and the Caldwell Trucking Site.

Since neither the OU2 Feasibility Study nor the Proposed Plan suggest that HTTD was analyzed or considered as appropriate for this Site, EPA at a minimum has an obligation to clarify the proposed technology and reissue the Proposed Plan for public comment. If EPA plans to pursue a HTTD remedy, the members of the public must be informed of the implications of high-temperature treatment and be afforded the opportunity to express their views on an informed basis. In the end, though, neither LTTD nor HTTD are appropriate for use at the Site, because both technologies present health and environmental pollution risks and implementability concerns that are not presented by other, more cost-effective technologies.

1. ***LTTD is not a complete "treatment technology"***
The Proposed Plan's selection of LTTD as a preferred remedy because it is a "treatment technology" for PCBs is misleading. EPA incorrectly describes LTTD as a process "whereby contaminants are typically destroyed" (see the Proposed Plan at page 14). This is inaccurate. LTTD is not a destruction technology; rather it is a transfer technology which concentrates the contamination in other media. As explicitly recognized in EPA's own guidance, "[t]hermal desorption is a physical separation process, not a destruction technology" (USEPA, 1997).

For true destruction and thus complete treatment of PCBs to occur, incineration is required. Since TD does not destroy the PCBs and only separates them from the soils, there must also be a plan for managing the residuals. Such a plan, which is not described in EPA's Proposed Plan, may involve either shipping concentrated PCB residuals off-site in tanker trucks or destroying them in an on-site incineration unit. Once again the absence of information about EPA's intention with respect to the separated PCBs renders the public notice provision of the Proposed Plan (as required by the NCP) to be inadequate.

Each of the potential residuals management options poses distinct risks to both on-site workers and the surrounding community which have not been adequately disclosed or addressed in either the OU2 Feasibility Study or the Proposed Plan. In addition, if EPA plans to use either high temperature TD (since LTTD is unlikely to work as noted above) or thermal oxidation to destroy the TD treatment residuals, the cost, time delay, and potential public concern implications must be addressed.

2. ***The OU2 Feasibility Study and the Proposed Plan Do Not Provide a Supportable Basis for Determining that Thermal Desorption Will Work at this Site.***
Without the benefit of treatability studies,[3] EPA has chosen to apply a technology to precisely the type of soils that it recognizes are most difficult to effectively treat by means of thermal desorption. EPA recognizes that LTTD cannot cost-effectively treat soils having high PCB and VOC concentrations, significant variability in particle size, nor soil with a significant volume of debris or rocks greater than 2" diameter (see the Proposed Plan at page 14). These are precisely the types of conditions that EPA has identified as affecting the principal threat soils at the Hamilton Industrial Park Site.

   a) **Site specific media impediments to thermal desorption**
   Based on the information known about contaminated soils at the Site, particularly principal threat soils, thermal desorption will plainly meet with considerable

[3] EPA has engaged in no treatability testing for thermal desorption at this Site, despite its own guidance stating that such testing "is often used at the remedy screening level to provide a quick and relatively inexpensive indication of the appropriateness of TD as a remedial technology." *Engineering Forum Issue Paper: Thermal Desorption Implementation Issues* (USEPA, 1997), and "Remedy selection studies yield data that verify that the technology can meet expected cleanup goals, provide information in support of the detailed analysis of alternatives, and give indications of optimal operating conditions." *Guide for Conducting Treatability Studies under CERCLA: Thermal Desorption Remedy Selection, Interim Guidance*" (USEPA, 1992).

impediments. For example, EPA knows that the principal threat soils contain very high concentrations of PCBs and are mixed with debris. These are exactly the conditions which are known to cause operational difficulties for thermal desorption.

EPA's technology roundtable organization, FRTR, has identified several conditions which limit the effective use of thermal desorption:

- Specific particle size and materials handling requirements can impact applicability or cost at specific sites.
- Dewatering may be necessary to achieve acceptable soil moisture content levels.
- Highly abrasive or oversize feed can damage the processor unit.
- Heavy metals in the feed may produce a treated solid residue that requires stabilization.
- Clay and silty soils and high humic content soils increase reaction time as a result of binding of contaminants.

Several of these limiting conditions described by FRTR are present at the Site.

The Hamilton Industrial Park Site has been used as an industrial and/or commercial site for about 70 years, resulting in significant non-soil materials being incorporated into the ground at the Site. Indeed, EPA describes Site soils as largely man-made fill, consisting primarily of cinders, ash brick, glass, metal, slag, and wood fragments (see the Proposed Plan at page 4). Almost all thermal desorption systems are designed to accept materials no larger than 1 to 2 inches in diameter in order to provide adequate heating (and treatment) and to protect the TD equipment (particularly feed or treatment augers). Thus, most, if not all, of the soil at the Site must be screened, adding a costly step to the remedy and increasing the risk of exposure to workers and the neighboring community.

EPA reports that at one site the volume of soil remaining after processing soil for TD treatment was roughly 2/3 of that originally estimated because of the significant amounts of oversized material removed (USEPA, 1997). Oversized material which is screened will then need to be decontaminated and disposed off-site, or otherwise managed. It is quite likely that only a fraction of the excavated materials will be of sufficient size to go through the thermal desorption unit at the Site, with the remainder to be trucked off-site for further treatment and disposal.

Even after the soil at the Site has been screened, native soils that pass the screening test are still not likely to be appropriate for thermal desorption. Soils having a high proportion of sand and gravel are far easier to handle and treat than the finer silts, silty sands, ash, and fill encountered at the Site during the OU2 Remedial Investigation (see the Proposed Plan at Page 4 and the test pit records provided in the OU2 Remedial Investigation Report). In addition, the fill materials in the area targeted for treatment may include diatomaceous earth which was used on-Site[4] (see Page 1-3 of the OU2 Remedial Investigation Report). Moreover, when soil moisture content is higher than 20%, thermal desorption costs increase, fuel usage (and air emissions) increase, and treatment throughput is reduced. Given the perched water encountered at the Site and overburden soils described as dry to saturated, the moisture content of certain Site soils may well prove problematic. Unfortunately, the soil moisture data were not interpreted in the OU2 Feasibility Study to evaluate this particular issue.

Heavy metals such as arsenic and lead have been identified in the soils at this Site. The Proposed Plan describes elevated concentrations of 23 different metals, with arsenic and lead detected at maximum concentrations of 1,060 mg/kg and 52,600 mg/kg, respectively. If off-gas incineration is chosen, then the arsenic and other metals will be transferred to and concentrated in the bag house particulate media, which will, in turn, require further treatment or off-site disposal to render it safe. Also, if the total or leachable concentrations of metals in the thermally-treated soils exceed regulatory limits, EPA's proposal of simply backfilling the treated soils will not be an option unless stabilization/solidification is also performed. As discussed in the next section, to the extent that solidification/stabilization will be utilized, there is no justification for starting with thermal desorption. Solidification/stabilization can address all of the contaminants of concern and is available as a more cost-effective and equally protective alternate remedy (see Section III of these comments).

b) Technology impediments to thermal desorption

EPA has not identified the specific type of thermal technology that it anticipates will be used at the Site. However, the selection of a specific thermal desorption technology will have a significant impact on implementability issues. At the Hamilton Industrial Park Site, EPA's OU2 Remedial Investigation reveals the presence of higher molecular weight PCBs that have boiling point temperatures ranging from 689-734 °F for Aroclor 1254, and from 725-788 °F for Aroclor 1260, which would suggest a reasonable minimum target treatment temperature of 800 °F, before they will desorb from the Site soils. This consideration, in turn, controls the type of thermal desorption equipment that may be effectively used at the Site.

The most likely candidate technologies include indirect fired thermal desorption units with PCB off-gas condensation or direct-fired thermal desorption units with off-gas incineration -- each of which presents its own implementability issues. For example, if off-gassed PCBs are treated with on-site incineration, then Agency approval of the implementation will require a "trial burn" under the Toxic Substances Control Act. This process can cause up to a one year delay in implementation due to permit equivalency issues. Indirect fired units, while not subject to a TSCA trial burn, are less available in the marketplace and typically have lower throughput rates (i.e., less

[4] Diatomaceous earth is a naturally occurring mineral derived from microscopic size fossilized remains of marine diatoms. It has high absorption capacity and low bulk density, which means these materials can be both substantially contaminated and become readily airborne.

than 10 tons per hour). This limited throughput could more than double the duration of treatment. Moreover, it is questionable whether a contractor for such a system could be found, given the duration of the operation and the restricted operating hours.

No matter what technology is chosen, EPA's commitment to operate the TD system only 8-10 hours per day will undercut the reliability of both the TD machinery and the associated air pollution control equipment. It is well known that TD units run most effectively when they operate 24 hours per day, 7 days per week. For example, EPA's Cost and Performance Report for the Wide Beach Development Site notes "At Wide Beach, the ATP unit was operated continuously (24 hours a day and 7 days a week), excluding system down time to repair the mechanical problems discussed below (approximately two months [out of twelve months total operation]) and to perform routine maintenance (approximately three days per month)." Thermal desorption and air pollution control systems are designed to be brought up to operating temperatures, and then to maintain stable temperatures during operation. Contractors offering LTTD services typically prefer to operate 24 hours/7 days a week to maintain optimum soil and off-gas treatment and to maximize throughput (and minimize costs). Limiting work to daylight hours as suggested in the Proposed Plan would cause excessive thermal cycling, which could well result in equipment failure and significant downtime. This is particularly pertinent to the large rotating kiln type units used in direct-fired, higher throughput operations.

Moreover, even if thermal treatment could practically be operated for only 8 hours per day as EPA suggests, it could not be performed for the unit costs incorporated into the Proposed Plan's cost estimate. Discussions with treatment vendors indicate that while the smaller, indirect fired units are less subject to start/stop upsets, their costs would significantly increase if work hours were limited. A longer duration project would obviously also increase oversight, management, administration, monitoring and public coordination costs, and delay the redevelopment of the Site.

Cyclic operation of desorption units also impacts the effectiveness of air emission pollution control technologies. Such technologies are necessary at the Site to manage the increased risk presented by the possible creation of dioxins and furans, as well as emissions associated with other uncombusted contaminants in soils such as metals. As previously discussed, when PCBs and PCB-containing particulates are maintained in 400-650°F temperature range, dioxins and furans are formed; these conditions are more likely to occur during system start-up and shut-down, which, under EPA's operational approach, would take place daily. Also, EPA itself recognizes that operating the thermal desorption unit in a way that increases heat transfer to the contaminated soil (such as during direct-fired heating) "usually increases carryover of dust to the [air pollution control equipment] and creates problems. For example, off-gas may burn holes in the baghouse filter media, and cause the induction fan to fail. The holes would allow particulate matter to pass through the bag walls and clog the carbon adsorption bed. The bed would then have to be regenerated more often during the clean-up process" (USEPA, 1997). By limiting operation of the TD unit to 8 to 10 hours per day, EPA increases the likelihood that such failures will occur, thereby creating new risks for the local community.

Finally, it is important to note that TD units can generate significant quantities of dust. For example, at the Navy's Public Works Center in Guam, almost one third of the feed soil mass after thermal desorption was collected as "dust" in the cyclone and baghouse. To address this dust issue, some vendors have started using auger- or screw-type reactors, instead of rotary kilns. However, it is difficult to raise the temperature of the soil beyond about 350 °C, or 662 °F, in auger reactors, and vendors who use higher temperatures often use an auger reactor and a rotary kiln in series, thus expanding the size of the treatment system and the complexity of the operation.

Because desorption of the higher chlorinated PCB Aroclors found at the Site will require operating temperatures greater than 800 °F, auger-type, indirect fired LTTD will not be effective in removing much of the Site contaminants. Therefore, dust loaded with high concentrations of PCBs and dioxins is very likely to be a persistent problem if TD is used at the Hamilton Industrial Park Site. Although some vendors have tried to overcome this problem by recirculating the dust collected in the cyclone and baghouse back into the kiln, it is likely that the growing proportion of fines (i.e., small particles) in the system will reduce its efficiency. Such engineering issues hamper the effectiveness of on-site thermal treatment and highlight the critical importance of EPA's having failed to follow its own advice and conduct a pilot scale test of thermal desorption before selecting it as the preferred remedy for the Site.

c) Regulatory impediments to thermal desorption

As previously noted, EPA fails to evaluate or identify a specific TD system in the OU2 Feasibility Study. Instead, the Proposed Plan states that contaminants will be "destroyed in a combustion chamber", and the Feasibility Study states that potential off-gas treatment may include a combustion chamber or catalytic oxidizer. Many types of thermal desorption systems are recognized as RCRA-regulated incinerators, such as systems that vaporize and then burn organic contaminants or operate at high temperatures or are equipped with afterburners (USEPA, 1997). Such systems must comply with the RCRA subpart O incinerator emission requirements rather than the RCRA subpart X requirements for thermal desorbers, a process which will add substantial permit equivalency time and increased cost to the project. The RCRA subpart O incinerator requirements would apply to a system where PCBs are "destroyed in a combustion chamber." On a typical thermal desorption project, the requisite testing, data analysis, reporting and review by federal and state regulatory agencies can last as long as one year. Public pressure has caused some states to refuse to permit PCB incinerators of any type. In part, this issue has led to the development of the indirect-fired and condensation type systems. Some indirect-fired systems have already obtained national TSCA permits. However, as noted above, these indirect-fired systems have less than one-half the treatment throughput assumed by EPA in the Proposed Plan.

C. EPA Has Not Adequately Explained To The Public The Human Health and Environmental Pollution Risks Associated with Thermal Desorption

Given the unique and site-specific risks that are often presented by the use of ex-situ thermal desorption at Superfund sites, governmental groups, including the EPA, FRTR, and the Agency for Toxic Substances and Disease Registry (ATSDR), have repeatedly cautioned regarding the risks posed in using this technology. ATSDR explicitly cautions that more information is needed prior to selecting thermal desorption near residential areas: "When EPA is conducting the feasibility study, if the site is surrounded by residential areas, modeling should be used to determine whether thermal treatment is a preferable technology for cleanup at that particular site" (ATSDR, 2002). According to ATSDR, such air modeling data should be presented to the public in advance and should include 5 years of meteorological data, topography, and land use criteria so the public can understand potential public exposure.

During the public meeting held by EPA to present the Proposed Plan, the community expressed its clear concern about potential airborne and other exposures relating to the Site remedial activities. However, EPA did not present any modeling data, nor did it describe the risks associated with thermal desorption that are not present in the other remedial technologies considered in the OU2 Feasibility Study. As described earlier, public disclosure of and discussion regarding the unique risks associated with thermal desorption should occur **prior** to remedy selection so that there can be informed public discourse on this issue. At sites where such disclosure and discussion has not occurred, public opposition has understandably grown as more information regarding the thermal remedy has become available, and this, in turn, has led to costly delays and after-the-fact remedy modifications.

The following summarizes the potential health and environmental risks presented by using thermal desorption at this Site.

1. *Creation of dioxins and furans presents significant risk*
   Unlike any of the other remedial technologies considered by EPA in the OU2 Feasibility Study, thermal desorption presents an entirely new set of risks not only to the workers, but to the surrounding community, through creation of new toxins and other pollutant emissions associated with increased energy usage. For example, the ATSDR notes that thermal desorption units can emit polychlorinated dibenzo dioxins (dioxins or PCDDs) and polychlorinated dibenzo furans (furans or PCDFs) in the stack emissions of PCB and RCRA thermal desorption facilities and incinerators (ATSDR, 2002).

   The risk of creation and release of these dioxins and furans is greatest when the gas temperature or downstream surfaces are in the range of 400-650°F. The existence of chlorinated organics in soil also increases the risks for dioxins and furans to exist (ITRC, 1998). Both of these circumstances are certain to exist at this Site if TD is implemented. Chlorinated dioxins and furans are formed when PCBs and particulates are maintained in the 400°F-650°F temperature range, which typically occurs (a) when thermal treatment units treating soils have a bag house after the primary or desorption chamber or (b) when heat transfer surfaces (such as boilers or heat exchangers) are present, thus allowing the deposition of particulates on surfaces where cooling can occur. In addition, dioxins and furans already present in site soils will likely be concentrated in the dust emitted from the TD unit, further complicating the off-gas control issues.

While there is much debate in the scientific community regarding the toxicity and carcinogenicity of chlorinated dioxins and furans, the potential release of these compounds during treatment has caused significant concerns and delays at other CERCLA sites. Even where laboratory studies have shown successful desorption of various compounds, actual field applications have presented significant engineering difficulties, leading to creation of additional risk. For example, at the Navy's Public Works Center in Guam, much of the PCB contamination was transferred during thermal treatment from the bulk soil to the fine particulates (dust) collected in the air pollution control train (NFESC, 1998). Treatment of a feed soil containing averaging 1,360 ppm of PCBs resulted in dust contaminated with as much as 109,331 mg/kg of PCBs in the cyclone and baghouse, and almost one third of the feed soil mass was collected as "dust". Equally important, elevated concentrations of dioxins were discovered in the dust. Although trace amounts of dioxins already present in the soil could account for some of the recovered dioxin mass, uncertainty was created by the fact that 25% of the initial PCB mass was unaccounted for during the treatment. The disposal of this much dust would be a challenge, and, in some cases, might result in a waste stream with underlying hazardous constituents (e.g., dioxin) at levels prohibiting land disposal under RCRA.

ATSDR states that "[a]n important key to preventing public exposure to hazardous emissions is to have a well-operated thermal treatment facility" (ATSDR, 2002). To accomplish this, the agency recommends maintaining stable operating conditions to minimize emissions. However, by cycling the thermal desorption unit in order to operate it only 8-10 hours per day, EPA cannot maintain the type of stable operating conditions necessary to meet ATSDR's objectives, and thus presents the nearby community with increased risk of short-term emissions exposure.

2. *Thermal technology creates additional worker and off-site hazards.*
The FRTR has identified several significant, unique hazards associated with thermal desorption, particularly for on-site workers and nearby residents and businesses, including "elevated noise levels in the work area due to the operation of air blowers, pumps, and the ignition of fuels ... that] may interfere with safe and effective communications." Other potential physical and chemical hazards unique to thermal desorption include possible fire or explosion, electrocution, thermal burns, infrared radiation hazards, and exposure to airborne toxins from incomplete combustion or energy use[5].

ATSDR articulates similar concerns for both worker and off-site exposure. Specifically, if the technology does not effectively decontaminate the solid waste on the first pass through the unit, worker exposure to contaminants could be increased. This would

[5] See http://www.frtr.gov/matrix2/ health safety/chapter 23.html.

especially apply if workers handle the partially treated waste as if it were clean prior to receiving the waste analysis. Additionally, the reprocessing and additional handling of partially treated solid wastes can also increase off-site exposure due to the greater potential for fugitive emissions (ATSDR, 2002). As discussed above, operating an ex-situ thermal desorption system on a cyclic basis for 8-10 hours per day where the temperature and soil constituents have not been appropriately characterized will present an almost certain need for re-treatment and thus trigger the risks flagged by ATSDR.

VOC-handling also presents significant concerns with LTTD. ATSDR warns that VOCs may be emitted as fugitive emissions and cause acute health problems for people off-site, and that explosions can occur when VOCs are treated (ATSDR, 2002).

3. ***Significant noise and odor problems are presented by thermal desorption.***
EPA guidance recognizes that ex-situ thermal desorption "has the potential for generation of nuisance odors and dust, as well as other more serious emissions resulting from on-site excavation." (USEPA, 1997). This problem is exacerbated at this Site due to the need for total excavation, screening and handling of more than 100,000 cubic yards of significantly contaminated media. This cautionary guidance is supported by experiences such as that at the Universal Oil Products Superfund Site in New Jersey (EPA/ESD/R02-99/122 1999) where a Record of Decision was signed in 1993 for thermal treatment of PCB contaminated soil. In 1997, the thermal treatment operation had to be dismantled because cleanup goals could not be met efficiently due to operational problems and because workers from an adjacent site complained about odors from the thermal operation.

In addition, most thermal desorption systems produce high decibel noise levels, resulting in excessive noise in the surrounding community. According to the 2001 *Technology Safety Data Sheet: Thermal Desorption* prepared by the National Environmental Education and Training Center, Inc., "[i]nstallation of gas treatment and dryer equipment presents the following hazards: Noise exposure can occur during the setup and preparation of the dryer kiln and for work necessary to connect equipment for system operation" (NEETC, 2001). Additionally, "[e]xcavation of contaminated soils and pre-screening activities prior to introduction into thermal desorption system presents the following hazards: Noise levels could approach and exceed acceptable limits to workers especially around soil screen machine and heavy moving equipment." For example, at the McClellan AFB, Sacramento, California, thermal desorption-related activities exhibited or generated elevated noise levels, with the highest recorded peak reading at 70 dBA. By way of comparison, the South Plainfield's Noise Ordinance[6] provides that no person shall cause, suffer, allow or permit sound from any industrial, commercial operation or residential property which when measured at any residential property line is in excess of any of continuous airborne sound which has a level in excess of sixty-five (65) dBA from 7:00 a.m. to 10:00 p.m and continuous airborne sound which has a sound level in excess of fifty (50) dBA from 10:00 p.m. to 7:00 a.m.

[6] See http://www.nonoise.org/lawlib/cities/nj/s_plainfield.htm

4. ***Additional pollution from increased energy consumption.***
EPA stated the following in its responses to comments on the Proposed National Contingency Plan (FR 8720):

> One commenter stressed that the impact of the remedial action on natural resources must be assessed under this criterion ... EPA agrees that the impact of the remedial action must be assessed and calls for this analysis under the short-term effectiveness criterion.

Implementing LTTD will require the use of significant amounts of fossil fuels. For example, the FRTR "Cost and Performance Report – Thermal Desorption at the Industrial Latex Superfund Site, Wallington, New Jersey" reports a 40 million BTU per hour indirect heating rate during treatment of PCBs and VOCs in soils. Scaling to the 80,250 tons to be treated at this Site at a 20 ton per hour production rate and allowing two hours per day for pre-heating would lead to approximately 5,000 hours of heating (see Appendix B). Converting from BTUs to natural gas leads to an estimate of 197 million cubic feet of natural gas to be burned to generate the heat needed for thermal desorption. Combusting this quantity of natural gas will cause a localized release of greenhouse gases, particulates and other airborne pollutants to which the local residents would not otherwise be exposed.

5. ***Other Risks***
The Proposed Plan assumes that the Preferred Alternative will require off-site transportation of 53,500 cubic yards of contaminated soil not treated with TD. At 1.5 tons per cubic yard, and 20 tons per truck-load, this would equate to more than 8,000 trips through the local community by large dump trucks. The need to transport clean backfill to the Site would add more than another 10,000 dump truck trips through the community. Given this level of transportation activity, the potential risks to the community associated with increased truck traffic must be afforded far greater consideration in the remedy selection. This is especially true in light of the surrounding neighborhood's sensitivity to traffic concerns, which was expressed during the Borough of South Plainfield's public meetings held to discuss Site redevelopment. Moreover, the potential for truck accidents and ensuing releases of contaminated materials is not merely theoretical as was evidenced by an accident involving a truck loaded with soil from the Tier II Removal Action while in route to the disposal facility. The consequences of such an accident and ensuing release become even more serious should tanker trucks containing concentrated PCB liquid residuals from the thermal desorption process be involved.

Notwithstanding the health and environmental risks uniquely associated with thermal desorption, EPA asserts that thermal desorption provides for greater long-term risk reduction in comparison with the other technologies evaluated. This assertion is directly contradicted by EPA's remedy selection for other PCB sites where EPA has rejected thermal desorption in favor of other approaches. These sites include the Scientific

Chemical Processing site in Carlstadt, New Jersey where EPA Region II concluded that the solidification-based remedy would be effective in the long-term, as it would reduce potential risks due to ingestion and dermal contact pathways and minimize any potential for contamination impacting groundwater. Similarly, at the York Oil, Co. Superfund Site in Moira NY, EPA Region II determined that: "Over the long-term, the on-site treatment options [including solidification and thermal treatment, among others] provide essentially equivalent protection to the local community". It is noteworthy that solidification/stabilization and on-site disposal under an alternative cap of 35,700 tons of soils and sediments impacted by PCBs, VOCs, oil and metals were successfully implemented at the York Oil Site, rather than the contingent remedial alternative of LTTD.

D. EPA's Proposed Plan Very Seriously Underestimates Both the Cost and Remediation Time Frame Associated with Using LTTD

1. EPA's unit costs for LTTD are severely underestimated.
Information provided with the OU2 Feasibility Study indicates that the EPA assumed that the LTTD component of the remedy would cost approximately $101 per ton (or approximately $151 per ton if a 50% mark-up for indirect costs and contingency is included –"fully loaded rate"). Information available from the FRTR and EPA clearly indicates the experience in using TD for PCBs at CERCLA sites yields actual treatment costs that are much higher than the estimated costs presented in the OU2 Feasibility Study and Proposed Plan.

For example, TD was utilized most recently at the Industrial Latex Site in Wallington, NJ where 53,685 cubic yards were treated for $15,700,000, or $292 per cubic yard (assuming 1.5 tons per yard, this equates to $195 per ton as a fully loaded rate). Similarly, TD treatment costs for the Outboard Marine Corporation Superfund Site were $3,370,000 for 12,755 tons, or $265 per ton. It is noteworthy that vendor estimates for the Outboard Marine Site project ranged from $700,000 to $1,500,000 (which means that actual costs were more than double the estimated remedial costs).

At one of the more independently documented field projects, Navy's PWC Guam, the cost of thermally treating 7,700 tons of PCB-contaminated soil was estimated at $360/ton (NFESC, 1998). Finally, at the Wide Beach Superfund Site, the fully loaded cost for TD of soils containing up to 5,000 ppm PCBs was completed at a cost of $379 per ton. Costs for TD treatment of PCB contaminated soils obtained from EPA's *Remediation Technology Cost Compendium – Year 2000* range from $162 to $548 per ton treated, including capital and operation and maintenance costs (USEPA, 2001).

Further understating EPA's estimate of LTTD costs was its decision to use a per ton estimate that did not include system set-up/trial burn, or system optimization. Nor did EPA attempt to incorporate its experience that TD costs associated with processing PCBs are significantly higher than costs of processing other contaminants. In fact, EPA reports, but does not take into account in its TD cost estimates for the Site, that sites where PCBs were present in the contaminated soil generally exhibited higher unit costs than projects where PCBs were not present. Further review indicates that, the types of emissions controls used for projects where PCBs are present differ substantially from those used for projects where PCBs are not present. The need for more protective emission controls is, of course, not surprising given the risk factors already discussed. For example, most of the projects where PCB contaminated soil was treated required the use of complex emissions control systems. Therefore, it was determined that projects involving PCB contaminated soil did not involve technologies having characteristics similar to those projects that did not involve PCBs, and that the costs for these two types of projects should be analyzed separately.

A further substantial impact on cost is the proposed operating approach of 8 to 10 hours per day of treatment. This approach is inherently inefficient for a process such as LTTD that works best as a continuous process. Such inefficiencies significantly increase contractor costs, and these increases are not reflected in EPA's unit costs.

2. ***The OU2 Feasibility Study and the Proposed Plan do not account for several other critical cost drivers.***
Other costs would be incurred during a TD remedy that must be considered to properly evaluate the likely cost of this alternative. These include:

a) Costs associated with off-site incineration of condensed PCBs and/or spent carbon from air pollution control equipment are not accounted for in the OU2 Feasibility Study or the Proposed Plan. Approximately 50,000 gallons of PCB oil were condensed during the Outboard Marine Superfund Site project. Implementation of thermal treatment with a condensation-based air pollution control technology could produce from up to 125,000 gallons of PCB oil (assuming 80,250 tons of soil are treated at an average contaminant load of 10,000 ppm PCBs), or up to 28 tanker trucks (4,500 gallon capacity each), that would have to be transported for off-site incineration. Similarly, thousands of pounds of activated carbon used for vapor-phase polishing would also have to be transported and incinerated off-site.

b) Air monitoring, reporting and public coordination costs are not explicitly identified in the OU2 Feasibility Study or the Proposed Plan. While LTTD has previously been conducted near residential areas, prior experience at other Region II sites (such as the Fulton Terminals Site in Fulton, NY, where LTTD was conducted on a small site within the town) suggests that extensive monitoring and public communication is needed during remedy implementation. Failure to adequately address public concerns can lead to significant project delays and adversely affect project costs.

c) As previously noted, most thermal treatment vendors' cost proposals assume efficient operation of their equipment in order to minimize time on site. EPA's assumed operations of only 8 to 10 hours per day will result in significant cost increases.

In addition, a review of NPL site remedial action case studies indicated that implementation of TD at other PCB sites has demonstrated that this technology is not always cost-effective, and it has had to be replaced by more effective alternatives.

3. ***More realistic calculation of costs.***
As indicated above, the Proposed Plan's estimated unit costs for LTTD of $101 per ton is significantly less than the documented experience at other PCB sites. Cost data from other projects indicate that thermal treatment of PCB soils could cost up to $500 per ton, an approximate 400% increase over the $101 per ton used in EPA's cost estimate. In addition, it is quite likely that the time to complete the thermal treatment will be much longer than the 2-3 year time line projected in the Proposed Plan. Even if a treatment system could operate at EPA's assumed throughput, just the thermal treatment of the soils would take 3 years. However, as discussed above, the TD that could be conceivably be operated under the Proposed Plan's constraints have only one-half the throughput assumed by EPA. Moreover, EPA's project time line does not include the design, construction, testing and permitting steps in the process. Realistically accounting for (1) the likely duration of these essential process steps, and (2) the throughput limitations discussed above results in a project schedule that could easily exceed ten years. The longer duration of design, testing and implementation, of course, increases the transactional costs, including oversight, which are also not accounted for by EPA.

In 1997, EPA predicted that costs for thermal processing would run up to $380 per ton for PCB –contaminated soil (USEPA, 1997a). Adjusting the cost estimate for the Preferred Alternative using EPA's $379 per ton cost (a unit cost also demonstrated at the Wide Beach Site by actual experience) and a time frame of 3 years of operation, the Total Present Worth Project Cost for this remedy is $86.8 million, almost $25 million more than $62 million estimate for EPA's Preferred Alternative[7] (see cost estimate details provided in Appendix A). Costs would increase even further if other appropriate Site-specific contingencies were incorporated in the cost estimates.

Since the Site-specific data reveals that TD will inevitably have a higher unit cost then that estimated in the Proposed Plan and may well require additional management of treatment residuals, we estimate that the Total Present Worth Project Cost using TD would almost certainly end up costing **at least $87 million**.

4. ***Schedule problems posed by operating the thermal desorption unit for only 8 – 10 hours per day.***
As shown on OU2 Feasibility Study table B-5, EPA assumes that active LTTD operations would be limited to only 8 to 10 hours a day, with a throughput of 20 tons per hour. Assuming 8 hours per day of treatment, and 2 hours per day of pre-heating and shut down, this approach equates to 2.8 years of treatment time - assuming no significant downtime or re-treatment volumes. As discussed above, no such treatment system

[7] It should be noted that the present worth costs are based on a discount factor of [illegible]% consistent with the cost estimates presented in EPA's Feasibility Study. Using the discount rate specified in February 2004 by the OMB for federal projects longer than 30 years of 3.5% would result in lower estimated present worth costs.

appears to exist which could satisfy these operating parameters (both with respect to throughput and operational approach). For example, full-scale TD treatment of 12,700 tons of soils and sediment at the Outboard Marine Site was completed at an average of 8.31 tons per hour. This productivity would equate to 6.7 years for the TD treatment portion of the work at the Hamilton Industrial Park, assuming, as EPA does in the OU2 Feasibility Study, that treatment is conducted 10 hours/day, 5 days/week, 36 weeks/year. While EPA does not identify which commercially available thermal desorption process was used in evaluating alternatives for the OU2 Feasibility Study, it is clear that the specific process used will dramatically affect the duration of the remedy and the resultant impacts on the local community.

III. Alternative Remedial Approaches for OU2

A. Alternative Remedy Overview

Because of the significant concerns identified with EPA's Proposed Plan for on-Site soils, particularly the recommended use of thermal desorption, it is important to consider whether there are any alternative remedial actions that would better satisfy EPA's remedy selection criteria. A careful review indicates that there are alternative remedial actions for OU2 that do not present the kinds of technical problems associated with thermal desorption at the Site, but will still be protective of human health and the environment; will comply with ARARs; will comport with EPA's guidance on properly addressing principal threat material; will be superior in terms of effectiveness, implementability and cost and can be more readily integrated in a timely manner with the planned redevelopment of the Site.

In addition to the remedial alternative discussed in the HIPG's July 16, 2003 letter to the National Remedy Review Board ("NRRB"; see discussion presented in Section IV), there is another promising alternative remedial action which EPA found to be protective of health and the environment in its OU2 Feasibility Study. That alternate remedy includes the following elements:

- Targeted excavation and off-site disposal of principal threat material within the capacitor disposal area, which constitutes the primary source of principal threat material (both in terms of PCBs and VOCs).
- Separation of debris from those soils in other areas of the Site having contaminant concentrations constituting principal threats. Soils generated from the debris separation process will be placed back in the treatment area, and the separated debris will be segregated and disposed of off-site.
- Treatment by means of in-situ solidification/stabilization (S/S) of soils having contaminant concentrations constituting principal threats. In areas where principal threat levels are limited to the shallow soils or cannot otherwise be treated in-situ (e.g., floodplain soils), these surface soils will be consolidated on-site into the larger area(s) which are subject to treatment. In addition, soils in designated clean utility corridors for purposes of Site redevelopment will be removed and consolidated prior to treatment.
- Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.

This remedial alternative offers the following distinct benefits:

- Targeted excavation of the capacitor disposal area addresses the primary principal threat material thereby removing a potential source of ground water contamination.

- Solidification/stabilization following excavation of the capacitor disposal area will address the primary risk pathways of concern.

- On-site containment of the remaining soils will avoid the potential risks and cost increases resulting from more intrusive excavation and treatment alternatives.

B. Solidification/Stabilization Overview

As documented in EPA's September 2000 publication entitled *Solidification/Stabilization Use at Superfund Sites* (USEPA, 2000), S/S is a widely accepted and applied treatment for a broad range of hazardous wastes. S/S is one of the top five source control treatment technologies used at Superfund remedial sites, having been used at more than 160 sites since 1982. These projects have utilized S/S to treat soils containing diverse contaminant mixtures, including VOCs, SVOCs, metals, PCBs, pesticides and/or radionuclides.

In applying S/S to sites with inorganic and organic contaminants, it is recognized that various mechanisms can be tailored to immobilize hazardous constituents. "Solidification" refers to changes in the physical properties of a waste, which usually include an increase of compressive strength, a decrease of permeability, and the encapsulation of hazardous constituents. "Stabilization" (also referred to as fixation) typically utilizes a chemical reaction to convert the hazardous constituents in a waste to a less mobile form. Different types of additives can be used to address contaminants such as PCBs, VOCs, and metals. For example, cement-based S/S reagents have been successfully modified by adding adsorptive materials (e.g., granular activated carbon) to the reagent mix to immobilize organics. Using adsorptive materials can also enhance the hydration of the pozzolan reagents by removing organics that can retard the hydration process.

C. Design Considerations to Address Primary Uncertainties

In its comments to the NRRB, the HIPG noted that there were significant potential issues with an S/S-based remedy which needed to be addressed before such a remedy could be selected. The point of the PRP Group's comments to the NRRB was to recognize those issues/concerns that may impact the effectiveness and cost of in-situ S/S, which were not considered by EPA in its initial evaluation and cost analysis of this alternative. Since the concerns raised by the HIPG's comments to the NRRB and the evaluation of solutions to address them were not fully discussed in either the OU2 Feasibility Study or in the Proposed Plan, the HIPG has undertaken a detailed evaluation of the S/S technology and has determined that the technical and cost uncertainties associated with S/S are in fact significantly less than those associated in the Preferred Alternative. Based on this detailed evaluation of the S/S technology as it applies to the Site, the HIPG's recommended remedial approach incorporates the following Site-specific considerations to address the concerns expressed by the HIPG in its comments to the NRRB:

- <u>Concern: Observations and data reported from the OU2 remedial investigation (RI) regarding the physical heterogeneity of the on-site soils.</u> As described in the RI Report, overburden materials at the Site are described as including man-made fill (gravel, cinders, ash, slag), debris (brick, glass fragments, wood, metal fragments, capacitors), and floodplain soils. The geophysical survey conducted during the RI indicates that the debris is widely scattered and shallow (i.e., less than 3 to 5 feet).

Site-Specific Solution: To address these heterogeneities, the HIPG's recommended alternative includes removal of the largest portion of the debris (i.e., the capacitor disposal area) for off-site disposal, and the separation of the remaining debris from the shallow soils prior to the implementation of in-situ S/S.

- Concern: The potential limitations of a single remedial technology to address chemical heterogeneities in waste streams. As indicated in EPA's Feasibility Study and Proposed Plan, it has been impractical to identify a single cost-effective excavation and/or treatment process to address metals, VOCs, SVOCs, and PCBs, present in soils to be remediated at the Site.

  Site-Specific Solution: As discussed above, the HIPG's recommended alternative includes a combination of technologies, including excavation/off-site disposal, debris separation, and in-situ S/S. This recommended alternative incorporates the use of pozzolan-based S/S reagent combined with an adsorptive additive such as carbon to achieve the necessary reduction in contaminant mobility for both organics and inorganics. A bench-scale treatability study will be conducted to develop the optimal mix design to reduce the leachability of all of the contaminants present, to reduce the soil permeability, and to ensure soil strength suitable for the planned Site redevelopment.

- Concern: On-site treated soils management may interfere with redevelopment plans. The increased volume of soils treated by means of S/S or the physical properties of soils treated by means of thermal desorption may result in additional remediation costs associated with off-site disposal of the treated soils or reworking of soils to allow for reuse as backfill prior to redevelopment.

  Site-Specific Solution: As indicated above, the S/S mix design studies will include an assessment of the ultimate strength of the treated soil matrix after curing. The goal of the studies will be to design a reagent mix that yields a treated soil that has geotechnical properties conducive to supporting the planned redevelopment loads. In addition, the recommended alternative includes the compaction of the treated soil in-place, if necessary, prior to curing to increase the in-place strength of this material.

  The recommended alternative will also address the increased volume of treated soil. For example, the increased volume of soil will be beneficially used in the redevelopment to fill in the capacitor disposal area excavation, and to achieve the grades required for the intended Site redevelopment and reuse (e.g., to raise grades under the building footprints to allow for loading docks). This advantage of S/S was highlighted in a recent article entitled *Applying Solidification/Stabilization Treatment to Brownfields Projects* where it was noted that[8]:

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[8] See http://www.cement.org/pdf_files/RP418.pdf.

> Long used in treating radioactive and hazardous wastes, solidification/stabilization (S/S) is also an increasingly popular treatment in the remediation of contaminated land, particularly brownfield redevelopment, since the treated wastes can often be left on site to improve the property for subsequent construction. … Reuse of treated material [has] saved developers significant costs, while providing for site redevelopment that is protective of human health and the environment.

Overall, it is expected that with proper design, soil treated by means of S/S can be readily used in the redevelopment, in comparison to soils that have been thermally treated at 800°F or higher. Such thermally treated soils will likely need to be amended to be suitable for future construction and Site redevelopment.

D. Effectiveness, Implementability and Cost

The recommended alternative will reduce any unacceptable risks to public health and the environment at the Site within a reasonable time frame, will cost significantly less than other alternatives, and will provide for long-term reliability of the remedy.

S/S will prevent the mobility of Site contaminants by reducing the availability of these contaminants within a micro- and/or macro-encapsulated matrix. Treatment by solidification will (a) bind PCBs, along with other contaminants, into cementitious hydration products, (b) create a soil with more physical integrity such as a granular solid or monolith, and (c) reduce the hydraulic conductivity of the soil. In addition, the use of adsorptive components in the S/S reagent mix will continue to reduce the leachability of these constituents, even if the encapsulated soil structure degrades over time.

- *Overall protectiveness of human health and the environment.* The recommended alternative will protect human health and the environment by virtue of elimination of the potential for direct exposure to Site contaminants and the potential for migration of contaminants to ground water through a combination of the treatment of principal threat material, redevelopment capping and institutional controls. The removal of the capacitor disposal area addresses the primary principal threat material acting as a potential direct contact risk and as a source of ground water contamination. The treatment of the remaining principal threat contaminated soils by means of S/S will eliminate the risks of potential dermal and inhalation exposure through encapsulation of the contaminants. In addition, S/S will eliminate the potential for the contaminated soil to act as a source of contamination to the underlying groundwater by sorbing contaminants onto granular carbon and encapsulating them within a low permeability cement matrix. Finally, the capping of the Site as part of the redevelopment project will further minimize potential contact with contaminated soil (both treated principal threat soils and other lower risk soils), protect the treated soil from damage by Site activities, and reduce infiltration. In short, the recommended alternative addresses the objectives for reduction in toxicity, mobility and volume, as follows:

- Removal of the most significant principal threat source material (i.e., the capacitor disposal area) and treatment of the remaining principal threat soils will result in an overall reduction in risk associated with OU2 soils.

- The volume of principal threat material will be permanently reduced through excavation and off-site disposal of the capacitor disposal area.

- The mobility of contaminants in soil will be reduced through S/S of the remaining principal threat soils and capping of both treated soils and lower risk soils.

• ***Implementability.*** The recommended alternative relies on widely applied technology, utilizing readily available equipment and materials. S/S is a well known, widely applied (i.e. used at over 160 Superfund sites to date) and readily available technology. This treatment technology has been successfully implemented using in-situ, ex-situ or a combination thereof at the following Superfund sites with which the HIPG's project team has had direct experience. It is to be noted that these sites were contaminated primarily with PCBs and VOCs, although some also were impacted by oils and/or metals.

  - PSC Resources Superfund Site in Palmer, Massachusetts.
  - York Oil Superfund Site (OU1and OU2) in Moira, New York.
  - Caldwell Trucking Superfund Site in Fairfield, New Jersey.
  - Chemical Control Superfund Site in Elizabeth, New Jersey.
  - Peak Oil/Bay Drum Superfund Site in Tampa, Florida.
  - Liquid Disposal, Inc. Superfund Site in Utica, Michigan.

  S/S is also the preferred alternative at the Scientific Chemical Processing Superfund Site in Carlstadt, New Jersey, which involves a similar application to that being proposed for this Site. In fact, S/S has been selected as a replacement technology at a number of sites where thermal desorption was initially selected, but later proved to be either ineffective and/or too costly. Finally, the ability to complete the recommended S/S alternative is not likely to be constrained by community concerns relating to noise associated with continuous operations, potential odor problems and avoidable increases in truck traffic on local roads.

• ***Long-term Effectiveness.*** The removal of principal threat material from the capacitor disposal area, treatment of the remaining principal threat soils by S/S, and redevelopment capping represents a long-term solution for this Site. The proposed S/S treatment technology has proven effective at other sites having PCB and VOC contamination, where concentrations of VOCs were reduced by up to 90% and the mobility of PCBs and VOCs was eliminated as evidenced by TCLP analysis of post-S/S samples. Performance testing of the S/S treatment is typically simple, with criteria based on the reduction in leachability of the contaminants of concern and the compressive strength of treated soils.

These specific performance criteria will be developed as part of the Remedial Design phase of work. Finally, the beneficial redevelopment and reuse of the Site helps to ensure continued maintenance and monitoring of the cap's integrity.

In addition to the ability of a S/S reagent to stabilize and encapsulate soil contaminants, S/S has the additional benefit of addressing the perched water that that was encountered in the treatment area during EPA's OU2 Remedial Investigation. Concern over how the perched water was to be addressed was voiced on several occasions by members of the public during EPA's public consultation meetings. While the presence of perched water would lead to additional soil handling difficulties during thermal treatment, S/S using Portland cement is frequently used to solidify RCRA liquid waste or solid-form waste with a free liquid portion so that the waste can be land disposed. This is the case because cement reacts with water, chemically binding it in cement hydration products. Thus, while perched water is not directly addressed by EPA's Preferred Alternative, it will be both addressed and effectively treated by the proposed S/S remedy.

- ***Short-term Effectiveness***. The recommended alternative, which relies heavily on in-situ treatment technology, avoids the need for unnecessary, extensive excavation. In addition, the alternative reduces short-term worker and community risks associated with excavation and off-site transport remedies[9], and the extensive handling of soils associated with ex-situ treatment. Due to the fact that only small areas will be treated at a time and that bulk excavation will not occur, the potential for VOC releases during in-situ mixing is far less than that associated with the other more intrusive remedies being considered by EPA in the Feasibility Study. The potential for unacceptable emissions during handling of surficial soils as part of the debris separation process is not expected to be significant (e.g., the estimated mean VOC concentration in soils remaining after the capacitor disposal area is removed is below the New Jersey residential direct contact soil cleanup criterion for TCE). However, the potential for unacceptable vapor and particulate emissions will be assessed as part of the Remedial Design, and appropriate control measures will be specified as necessary.

  Based on discussions with technology vendors and experience at other sites, it is anticipated that design and implementation of the recommended alternative can be completed in 3 years or less, in contrast to the estimate discussed above for the Preferred Alternative of up to 10 years.[10]

- *Cost.* To assess the likely potential costs associated with in-situ S/S given the Site-specific soil/debris characteristics reported for the target remediation area, Battelle issued an RFP requesting budgetary cost proposals from several technology vendors. This RFP specified that, in order to reduce the total volume of soil disposed off-site, the use of in-

[9] EPA's Preferred Alternative includes the off-site disposal of over 53,500 cy of soil. This is equivalent to at least 8,000 truck trips to and from the Site via local roads, with more than 10,000 additional truck trips for backfill material.

[10] Given the considerations noted in Section I above, it is likely that the 2 to 3 years estimated by EPA for design, construction, testing and implementation of the Preferred Alternative will in fact be considerably longer, i.e., on the order of at least 5 years, and depending on the specific TD equipment used, could well exceed 10 years.

situ S/S is planned for over 75,000 cubic yards of impacted soil. Battelle requested that the budgetary cost proposal cover two phases of the project: The first phase is a bench-scale treatability study to determine the optimal in situ S/S formulation, to be followed by full-scale implementation as the second phase. The total costs for the two phases quoted by S/S technology vendors ranged from $55 to $79/cy for Portland cement based S/S. Although higher than the costs estimated in EPA's FS for this component of Alternative S-4, the projected cost range is consistent with information reported by EPA and other Federal entities for other sites.

Based on these costs provided by the S/S treatment contractors, the HIPG estimates that the Total Construction Cost for remediation of OU2 soils, including the capacitor disposal area removal and redevelopment cap would be on the order of $24 million utilizing a conservative vendor estimate of $79/cy and 107,000 cy to be solidified (see cost details provided in Appendix A). The Total Present Worth cost for this alternative is approximately $36 million. This conservatively based figure derived from actual vendor cost estimates is only 57% of the estimated Total Present Worth Cost of $62 million for EPA's Preferred Alternative and only 41% of the more likely cost of EPA's Preferred Alternative (see Section II.D) of $86.8 million.

E. No Need for Separate Treatment (SVE) for VOCs

In the assessment of a S/S-based remedy for this Site as set forth in the OU2 Feasibility Study, EPA included the use of soil vapor extraction (SVE) to reduce VOC concentrations present in soils prior to implementing S/S and capping to address inorganics and other organics (including PCBs). In its evaluation of the this remedial alternative (identified in the Feasibility Study as Alternative S-4), EPA estimated that SVE treatment could extend the implementation of this treatment to as much as 6 to 8 years, which, in turn, could interfere with timely redevelopment of the Site.

As described above, soils having the highest VOC concentrations will largely be removed as part of the capacitor disposal area excavation. To address the presence of VOCs in remaining soils identified as principal threat materials, granular activated carbon can be added to the reagent mix so as to sorb the VOCs and then encapsulate them within a low permeability cement matrix. Utilizing this methodology will eliminate the need for treatment with SVE prior to implementing S/S. Capping the Site with a redevelopment cap following treatment by means of S/S will then provide a second layer of protection against potential leaching of VOCs to ground water and against direct contact exposures. Finally, the potential for unacceptable vapor and particulate emissions during implementation of ex-situ debris separation combined with in-situ S/S will be assessed as part of the Remedial Design, and appropriate control measures will be specified as necessary.[11]

[11] Significantly, EPA did not believe that SVE was necessary as part of the Preferred Alternative. Given that the Preferred Alternative entails the excavation of far more contaminated soils than does an S/S remedy, it follows that SVE would not be necessary in an S/S-based remedy.

Therefore, SVE is not necessary to address VOCs in soil as part of the HIPG's proposed alternate remedy in order to achieve an acceptable level of both short-term and long-term protectiveness for the Site.

F. Redevelopment Capping

As discussed in the Proposed Plan, EPA has acknowledged the Borough of South Plainfield's Redevelopment Plan for the Site and surrounding properties, which includes complete renovation of the Site for retail, commercial/light industrial "flex" space and warehousing uses. In particular, EPA has indicated that hardscape (i.e., paving and buildings) to be constructed as part of Site redevelopment may be used in place of the multi-layered cap for soils containing contaminant concentrations below principal threat levels. The HIPG agrees with a remedial strategy that incorporates the Site redevelopment plans as integral components of the remedy. In this connection, the use of the "redevelopment cover" in place of a multi-layered cap should include the use of vegetative soil cover to be installed as part of the Site redevelopment grading and landscaping plans. This should be the case for the following reasons:

- **There are no significant residual risks of exposure associated with the contained soils.** As a practical matter, the only threat of potential exposure remaining after the targeted excavation of the capacitor disposal area and capping by the redevelopment hardscaping and soil cover will be contact with the in-place material during some future maintenance activities that involve excavation. This eventuality will be minimized through the location of "clean corridors" for utilities and similar installations. Should maintenance activities require work outside such clean corridor areas, the workers can be protected from direct contact with the contaminated soils through work practices and personal protective equipment. And, even if due to error or oversight, such precautions are not adequately implemented, any contact would be short term in nature, with a correspondingly significantly lower resulting risk.

- **Targeted excavation and S/S addresses the primary principal threat material acting as a potential source to ground water contamination.** The VOCs in soil, the highest concentrations of which are primarily co-located with the capacitor disposal area, will be largely eliminated by the excavation of these materials and by the application of S/S to the remaining principal threat materials. Therefore, a redevelopment cover (asphalt, building slabs, and vegetative soil cover) will cap only the lower, non-principal threat material remaining on-site after the excavation of the capacitor disposal/debris area and the implementation of the S/S treatment technology.

- **Redevelopment areas using vegetative cover are largely limited to the perimeter of the property**. According to the current redevelopment plans proposed by the Borough's selected redeveloper, the areas of the Site which are subject to more significant contamination (including the areas to be treated by S/S) will be covered primarily by hardscape (buildings and pavement). The portions of the Site where vegetative cover will be used are limited to an approximately 50' wide landscaped buffer along Spicer Avenue, in the storm water detention basin area near existing Buildings 13, 14 and 15, landscaped islands in the parking lots, and the preserved open space and wetlands along Bound Brook. Given the very limited extent of vegetative cover to be used in the main portion of the Site where the principal contamination is located and active soil remediation is being required, the lack of a multi-layered cap in these areas will not materially affect the overall reduction in the infiltration rate achieved by this remedy. A geotextile marker layer can be used to identify underlying native soils in the event excavation in these areas proves necessary at some time in the future.

G. Summary

Based on an independent evaluation of the applicability of S/S technology to OU2 soils, a remedial approach that combines removal, treatment by S/S and containment to mitigate the exposure pathways that are contributing to the OU2-related risks provides an equally protective alternative to thermal desorption, better satisfies EPA's remedy selection criteria and will allow for the integrated redevelopment of the Site within a reasonable time frame. As outlined above, this remedial approach combines elements of both treatment and containment to mitigate the primary exposure pathways identified in the OU2 risk assessment, and addresses EPA's preference for treatment of principal threat material as defined based on these primary exposure pathways. Further, this remedial approach incorporates the planned redevelopment of the Site as recommended under EPA's Superfund Redevelopment Initiative and in EPA's guidance on the reuse of Superfund sites for commercial use. Finally, the recommended alternative is significantly more implementable and cost-effective than EPA's Preferred Alternative.

IV. The Alternative Remedy Presented in the HIPG's Comments to the National Remedy Review Board.

As indicated in Section III above, in addition to the alternate remedy detailed in Section III of these comments, the HIPG presented a promising remedial alternative in its July 16, 2003 addressed to the National Remedy Review Board. This remedy is also superior to the Preferred Alternative in terms of avoiding the multiple, serious problems associated with thermal desorption; being protective of human health and the environment; complying with ARARs; comporting with EPA's guidance on properly addressing principal threat material; being superior in terms of effectiveness, implementability and cost; and being more readily integrated in a timely manner with the planned redevelopment of the Site. As previously noted, this second alternative involves the following elements:

- Excavation and off-site disposal of principal threat material, including the material within the capacitor/debris disposal area which represents the primary source of principal threat material (both PCBs and VOCs).

- Redevelopment capping for all other soils using the hardscape and soil (vegetative) cover to be installed as part of the Site redevelopment.

Given these elements, this second alternative offers the following significant advantages:

- There are no significant residual risks of exposure associated with the contained soils. As a practical matter, the only threat of potential exposure remaining after the targeted excavation of the Site and capping by the hardscaping and soil cover will be contact wi .1 the in-place material during some future maintenance activities that involved excavation Under this scenario, the workers can be protected from direct contact with the contaminated soils. However, in the event such precautions were not followed, contact would be short term in nature, and at a target cancer risk level of 10^{-2} and target HI of 100, "principal threat" levels under this type of exposure would correspond to a concentration on the order of 10,000 mg/kg or 10 times higher than the maximum concentration proposed to be left in-place.

- Targeted excavation addresses the primary principal threat material acting as a potential source to ground water contamination. The VOCs in soil, the highest concentrations of which are primarily co-located with the capacitor disposal/debris area, will be largely eliminated by the excavation of these materials. The redevelopment cover (asphalt, building slabs, vegetative soil cover) will contain the lower threat material remaining on-site after the excavation of the capacitor disposal/debris area. Any residual impacts to groundwater by the contained materials remaining on-site will be insignificant.

- Following targeted excavation, Site redevelopment will adequately address the primary risk pathways of concern. According to EPA's baseline human health risk assessment, the majority of the cancer risks and non-cancer HIs under the future use scenario are associated with exposure to non-VOCs in soil via incidental ingestion, dermal contact and/or particulate inhalation. The exception to this is for the future indoor worker in the currently undeveloped portion of the Site. As indicated above, soils having elevated VOCs will largely be removed as they are co-located with the capacitor disposal/debris area. The risks associated with the soils left in-place can be adequately mitigated via pathway elimination – i.e., the construction of large areas of hardscape (pavement and buildings) as part of the Site redevelopment will eliminate routine exposures to contaminants in site soils, regardless of concentration.

Finally, it should be emphasized that the removal of even principal threat material is not required in all cases. EPA's *Guidance on Remedial Actions for Superfund Sites with PCB Contamination* recognizes that in some cases it may be appropriate to contain principal threats as well as low-threat material, because there are large volumes of contaminated material or the PCBs are mixed with other contaminants that makes treatment impracticable (USEPA, 1990). Such material that is not treated should be contained to prevent access that would result in exposures exceeding protective levels. Indeed, in the case of the Raymark Site with 21,000 cy of on-site principal threat wastes, EPA determined that the risks and costs associated with treatment of the substantial volumes of contaminated soil waste materials on-site outweighed the limited increase in protectiveness afforded. Therefore, treatment was not found to be practical, and a capping remedy was selected for the Raymark Site.

EPA did not adequately consider this proposed remedial alternative in its OU2 Feasibility Study or in its Proposed Plan. However, this alternative remains a viable remedy for the Site, since it is protective of human health and the environment, implementable, and cost-effective.

V. Comments on the Remedial Action Objectives

According to the Proposed Plan, EPA proposes to implement a remedy which includes active remediation (through treatment and/or removal and off-site disposal) of soils designated as "principal threat" material, and containment of soils contaminated at lower concentrations. EPA has designated principal threat material as those soils contaminated with PCBs at concentrations greater than 500 ppm and with other contaminants that may act as a continuing source of ground water contamination. EPA identified the August 1990 guidance entitled *A Guide on Remedial Actions at Superfund Sites with PCB Contamination* as the basis for establishing a PCB concentration greater than 500 ppm as the principal threat cleanup goal for PCBs, and the New Jersey Impact to Groundwater Soil Cleanup Criteria (IGWSCC) as the principal threat cleanup goal for other constituents of potential concern.

However, in attempting to provide treatment for principal threat wastes, EPA fails to apply appropriately its own guidance when defining what constitutes a principal threat. The following details the shortcomings of EPA's approach to defining principal threat waste as set forth in its Proposed Plan.

- **Definition of Principal Threat Concentrations**
  In designating soils for active remediation, EPA has failed to apply appropriately its guidance on principal threat materials. Properly applied, EPA's guidance dictates that the volumes of principal threat materials will be substantially less than projected by EPA. EPA's definition of principal threat material is as follows: "Principal threat wastes are those source materials [including contaminated soil] considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner and/or would present a significant risk to human health or the environment should exposure occur" (USEPA, 1991). EPA has not established an absolute threshold level of risk for identifying principal threat materials. However, it considers as principal threat "those source materials with toxicity and mobility characteristics that combine to pose a potential risk *several orders of magnitude* greater than the risk level that is acceptable for the current or reasonably anticipated future land use, given realistic exposure scenarios" (USEPA, 1997b, emphasis added). In Superfund, acceptable risk levels are cumulative excess cancer risk to an individual based on reasonable maximum exposure for both current and reasonably expected future land use of 10^{-4} or less, and a non-cancer hazard index (HI) of 1 or less (USEPA, 1991a). Therefore, contaminated soil that poses a cumulative excess cancer risk higher than 10^{-2} or represents a HI higher than 100 (i.e., at least two orders of magnitude higher than the acceptable levels) might be reasonably viewed as a principal threat material for which treatment should be considered. Conversely, contaminated soil that poses cumulative excess cancer risk lower than 10^{-2} or represents a HI lower than 100 may be considered as low-level threat material for which containment would be appropriate.

  EPA also fails to consider future site use in its evaluation for the alternatives which target principal threat materials. EPA's Principal Threat Analysis should be conducted in the context of the future site redevelopment. As accepted by EPA (and

NJDEP) for the former Hyatt Clark Industries, Inc. Site in Clark, New Jersey, the principal threat assessment should be based on potential risks under likely future conditions following site redevelopment, rather than hypothetical risks under generic land use conditions. Given the specific redevelopment plans for this Site (i.e., largely covered by pavement and buildings for retail, commercial/light industrial "flex" space and warehousing), the potential risks to persons who may be exposed to soils underlying the pavement and buildings, such as utility maintenance workers, should serve as the basis for the principal threat analysis rather than a "routine worker" who is unlikely to come in contact with soils under the pavement or buildings during daily activities.

There is direct precedent, including in EPA Region II, for setting remedial action objectives (RAOs) in Records of Decisions (RODs) which do not rely on constituent-specific cleanup goals, including principal threat-based goals, but rather identify cleanup based on overall risk reduction. For example, the ROD for the Raymark Industries, Inc. site in Stratford, Connecticut (EPA/ROD/R01-96/116, 1995) and the ROD for the Scientific Chemical Processing site in Carlstadt, New Jersey (EPA/ROD/R02-02/11, 2002) address the remediation of principal threat materials (including PCBs and VOCs) without specifying constituent-specific numerical cleanup goals to identify these materials. Of particular relevance to this Site is the approach utilized at the Scientific Chemical Processing site to identify a "Hot Spot" area of high-level or principal threat waste and to define the RAOs from a risk-based perspective. Specifically, as part of the Feasibility Study for this site, the definition of a Hot Spot was "an area where, if chemical constituents were removed and/or treated, the site-wide risk would be reduced by over an order of magnitude; and an area small enough to be considered separately from remediation of the entire Fill area." In articulating the site remediation standards for the Scientific Chemical Processing site, USEPA Region II recognized that no chemical-specific ARARs exist for soil, so that remediation goals were necessarily risk-based. The stated RAOs for soil were to:

- "Mitigate the direct contact risk and leaching of contaminants from soil, fill material and sludge into the groundwater;
- Reduce the toxicity and mobility of the Hot Spot contaminants via treatment; [and]
- Perform remediation in such a manner that may allow site re-use for certain limited commercial purposes."

- **Principal Threat Concentration for PCBs in On-Site Soils**
  EPA is relying on outdated and inappropriate PCB criteria for estimating contaminated soil volumes. EPA's definition of principal threat material as soils containing PCB concentrations greater than 500 mg/kg is based on outdated information presented in the 1990 *Guidance on Remedial Actions for Superfund Sites with PCB Contamination*. As summarized in Appendix C, the assumptions used by EPA in developing the criteria suggested in the 1990 guidance, including the toxicity

data for PCBs, have been updated since 1990. Use of updated toxicity data and exposure assumptions would result in a different PCB concentration defined as principal threat.

Specifically, the numerical-based approach for defining concentrations of PCBs to be designated as principal threat that would be consistent with Superfund precedent, based upon EPA's principal threat and risk assessment guidance, and would use current toxicity data for PCBs, can be stated as follows:

> *Soil remediation should be conducted to the extent necessary to achieve a waste management strategy that reduces Site risks to within an EPA-accepted risk range (excess cancer risk range of 10^{-6} to 10^{-4}, and a noncancer hazard index of 1 or less; OSWER Directive 9355.0-30). Soil removal or treatment shall be conducted to meet a maximum lifetime excess cancer risk level of 1×10^{-2} and a noncancer hazard index of 100 based on reasonable exposure for both current and reasonably expected future land. For key indicator chemicals detected at the subject site, namely polychlorinated biphenyls (PCBs), this risk level corresponds to an individual constituent principal threat level[12] of 1,100 mg/kg.*

- **Principal Threat Concentrations for Other Constituents**
  EPA has inadequately evaluated the concentrations in soils that have the potential to impact ground water. EPA has relied on the NJDEP criteria for non-PCB contaminants of concern (i.e., NJDEP IGWSCC) to define soil to be remediated in order to mitigate potential impacts to ground water. NJDEP's IGWSCC have not been promulgated and, as such, are not applicable or relevant and appropriate requirements ("ARARs"). Rather, NJDEP has published these criteria merely as guidance levels for its site remediation program. Site-specific evaluation of potential impacts to ground water from soil contaminants, taking into consideration the possible remedies for ground water, would very likely increase the threshold concentrations for non-PCB contaminants of concern that would meet the definition of principal threat.

  Further, the primary concern with respect to impact to ground water is associated with elevated VOC concentrations in soil. The VOCs in soil, the highest concentrations of which are primarily co-located or immediately adjacent to the capacitor disposal area, will be largely eliminated by the excavation of these materials as specified in the Proposed Plan. The redevelopment cover (asphalt, building slabs, and vegetative soil cover) will contain the lower threat material remaining on-site after the excavation of the capacitor disposal area. Any residual impacts to groundwater by the contained materials remaining on-site will be insignificant. The potential significance of these residual concentrations should be further evaluated in consideration of (1) the overall groundwater remedy, and/or (2) a site-specific criteria for assessing the potential leaching of VOCs to groundwater. EPA's failure to integrate into its analysis of

[12] "Principal threat cleanup levels" are scaled from EPA Region 9 preliminary remediation goals for industrial soils which are calculated at a target cancer risk level of 10^{-6} and a noncancer hazard index of 1.

possible OU2 soil remedies the potential groundwater remedies which may be implemented at the Site poses the significant risk that EPA will select in both OU2 and OU3 inefficient and uncoordinated remedies to address both soil and groundwater issues.

In summary, the risk-based approach employed at the Scientific Chemical Processing, Raymark and Hyatt Clark sites provides guidance for defining principal threat materials in terms of cumulative risk and setting performance-based RAOs that is directly transferable to the Hamilton Industrial Park Site. EPA estimated soil volumes should be based on current site-specific risk assessment approaches, including the assessment of total risk over an exposure area, not just risk associated with a single constituent at a single sampling point. Use of a site-specific risk-based approach for defining "principal threat" material as soils in an exposure area exhibiting an exposure concentration in excess of *several orders of magnitude* greater than the acceptable risk level would result in lower estimates of soil to be actively remediated, while still protecting human health and the environment consistent with applicable EPA guidance.

References

Agency for Toxic Substances and Disease Registry (ATSDR), 2002. *Public Health Reviews of Hazardous Waste Thermal Treatment Technologies.*

Interstate Technology & Regulatory Council (ITRC), 998. *Technical Guidelines for On-Site Thermal Desorption of Solid Media and low level mixed waste Contaminated with Mercury and/or Hazardous Chlorinated Organics.*

National Environmental Education and Training Center, Inc. (NEETC), 2001. *Technology Safety Data Sheet: Thermal Desorption* http://www.neetc.iup.edu/safety/tsds/tsds_docs/thermal_desorption.pdf.

Naval Facilities Engineering Services Center (NFESC). 1998. *Application Guide for Thermal Desorption Systems.* Technical Report TR-2090-ENV. April.

USEPA 1990. *Guidance on Remedial Actions for Superfund Sites with PCB Contamination.* EPEA/540/G-90/007. Office of Emergency and Remedial Response. August.

USEPA. 1991. *A Guide to Principal Threat and Low Level Threat Wastes.* OSWER Directive 9380.3-06FS. November.

USEPA. 1991a. *Role of the Baseline Risk Assessment in Superfund Remedy Selection.* OSWER Directive 9355.0-30. April.

USEPA. 1992. *Guide for Conducting Treatability Studies under CERCLA: Thermal Desorption Remedy Selection, Interim Guidance.*

USEPA. 1997. *Engineering Forum Issue Paper: Thermal Desorption Implementation Issues.* Office of Emergency and Remedial Response. EPA 540/F-95/031. January.

USEPA, 1997a. *Management of Polychlorinated Biphenyls in the United States.* Office of Pollution Prevention and Toxics.

USEPA. 1997b. *Rules of Thumb for Superfund Remedy Selection.* EPA 540-R-97-013. August.

USEPA, 2000. *Solidification/Stabilization Use at Superfund Sites.* EPA-542-R-00-010.

USEPA. 2001. *Remediation Technology Cost Compendium – Year 2000.* Office of Solid Waste and Emergency Response. EPA-542-R-01-009. September.

September 3, 2004

APPENDIX A

REMEDIATION COST ESTIMATES

Hamilton Industrial Park
Superfund Site
West Plainfield, New Jersey

Table 1	EPA's PREFERRED REMEDY: S-3/S-3 - HPG Breakdown of Costs Summarized in FS / Proposed Plan and Appropriate HTTD Cost				1.5	
	Estimated Quantities	Units	Unit Price	Total Construction Costs	Approx Task Cost w/indirects	comments & assumptions
CAPACITOR DISPOSAL AREA					$414,421.88	
- Excavation	7,500	cu yd	$5.34	$40,050		
- Clean Fill	9,375	cu yd	$24.27	$227,531		
- Compaction	7,500	cu yd	$1.16	$8,700		
MULTI-LAYERED CAP					$6,649,172.48	
- Clearing and Grubbing	8	acre	$621.03	$5,217		
- Top Soil (6")	16,000	cu yd	$28.41	$454,560		
- Clean Fill (12")	31,000	cu yd	$24.73	$766,630		
- Drainage Sand (6")	16,000	cu yd	$25.05	$400,800		
- Compaction (24")	63,000	cu yd	$1.16	$73,080		
- Geotextile (2 layer)	2,000,000	sq ft	$0.85	$1,700,000		
- HDPE Liner	1,000,000	sq ft	$1.00	$1,000,000		
- Vegetation	19	acre	$1,675.00	$32,495		
ENGINEERED CONTROL					$193,115.25	
Excavation	2,300	cu yd	$5.34	$12,282		
Clean Fill	2,900	cu yd	$24.27	$70,383		
Topsoil	1,400	cu yd	$30.17	$42,238		
Compaction	2,300	cu yd	$1.16	$2,668		
- Vegetation	1	acre	$1,675.00	$1,173		
EXCAVATION					$5,921,520.00	
Clearing and Grubbing	0	acre	$621.03	$0		included above with Capping
Excavation	107,000	cu yd	$5.34	$571,380		
Clean Fill	134,000	cu yd	$24.27	$3,252,180		
Topsoil	0	cu yd	$30.17	$0		
Compaction	107,000	cu yd	$1.16	$124,120		
LTTD	1				$31,024,624.50	Pro-rate 50/50 disposal and TD
- Mobilization/Demobilization	2	ea	$120,000.00	$240,000		
- Permit/Eng for site	1	ea	$40,833.00	$40,833		
- Excavation	0	cu yd	$5.34	$0		included above with Excavation
- Debris Segrega on	11,000	cu yd	$9.00	$99,000		
- Indirect Fire. Rer 'al & Oper.	80,250	ton	$253.00	$20,303,250		assumes PCB TD costs similar to Wide Beach
- Equip. Maint. (8%)	3	yr	$142,222.00	$398,222		
OFF-SITE DISPOSA						
Off-site Disposal -TSC	1				$20,794,781.25	Pro-rate 50/50 disposal and TD
- TSCA Waste (>50 p m)	60,188	ton	$157.00	$9,449,438		Tonnage based on EPA S-3 (75% direct dispose)
- Requiring Treatment	20,063	ton	$220.00	$4,413,750		Tonnage based on EPA S-3 (25% treat & dispose)
Off-site Disposal-Non-TS A					$1,732,500.00	
- Non-TSCA Waste (<5(ppm)	16,500	ton	$70.00	$1,155,000		
- Requiring Treatment	0	ton	$155.00	$0		
Capacitor Disposal Area					$4,410,000.00	
- Disposal	10,400	ton	$270.00	$2,808,000		
- Requiring treatment	600	ton	$220.00	$132,000		
Condensed PCB Oils	1,605,000	pounds	$0.75	$1,203,750	$1,805,625.00	assumes 53,500 yards at avg. 10,000 ppm PCBs; condensation and off-site incineration

Total Direct Construction Costs (TDCC)	**$49,000,000**	
Area Code 07080 Factor of 1.1	$4,900,000	0.1
TDCC Subtotal	**$53,900,000**	
Contingency at 20% of TDCC	$10,780,000	0.2
Engineering and Construction Management @ 15% of TDCC	$8,085,000	0.15
Legal and Administrative @ 5% of TDCC	$2,695,000	0.05
Contingency, Engineering and Construction Management, Legal and Administrative and Location Specific Adders:	**$26,500,000**	
Total Construction Cost	**$75,460,000**	
Maintenance (8% Capital Cost)	$363,309	
20% Contingency	$72,662	
Annual O&M	**$435,970**	
		30 years
		1.0% discount rate
Present Worth Total Maintenance Cost	**$11,300,000**	
Total Present Worth Project Cost	**$86,800,000**	

9/2/2004

de maximis, inc.

Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Table 2		Suggested Alternative: Modified S-4 HIPG Cost Estimate				1.5	comments & assumptions
		Estimated Quantities	Units	Unit Price	Total Construction Costs	Approx Task Cost w/indirects	
CAPACITOR DISPOSAL AREA						$414,422	
- Excavation		7,500	cu yd	$5.34	$40,050		
- Clean Fill		9,375	cu yd	$24.27	$227,531		
- Compaction		7,500	cu yd	$1.16	$8,700		
MULTI-LAYERED CAP	adjustment					$4,311,148	Redevelopment cap in place of multilayered RCRA type cap
- Clearing and Grubbing	1	8	acre	$621.03	$5,217		
- Top Soil (6")	0	-	cu yd	$28.41	$0		
- Clean Fill (12")	1	31,000	cu yd	$24.73	$766,630		
- Drainage Sand (6")	0	-	cu yd	$25.05	$0		
- Compaction (24")	0.5	31,500	cu yd	$1.16	$36,540		
- Geotextile (2 layer)	0	-	sq ft	$0.85	$0		
- HDPE Liner	0	-	sq ft	$1.00	$0		
- Vegetation	0	-	acre	$1,675.00	$0		
Asphalt cover (hydraulic asphalt)	1	93,896	sy	$22.00	$2,065,712		Unit cost is a blended rate (of vendor quotes)
ENGINEERED CONTROL						$193,115	
Excavation		2,300	cu yd	$5.34	$12,282		
Clean Fill		2,900	cu yd	$24.27	$70,383		
Topsoil		1,400	cu yd	$30.17	$42,238		
Compaction		2,300	cu yd	$1.16	$2,668		
- Vegetation		1	acre	$1,675.00	$1,173		
SOIL SOLIDIFICATION/STABILIZATION						$12,679,500	EPA S-4 estimate for this task (w/indirect) is $5.6M
In-situ treatment		107,000	cy	$79.00	$8,453,000		Unit cost is highest of cement-based S/S vendor quotes
Equipment		-	mo	$38,342.00	$0		included above
Operational Labor		-	hr	$347.37	$0		included above
Equipment Maintenance		-	yr	$6,812.00	$0		included above
Monitoring Program		-	yr	$2,700.00	$0		included above
SVE SYSTEM						$0	No SVE proposed
Well Installation				$0.00			
- Drilling (8" HSA)		-	LF	$24.85	$0		
- Casing (4" PVC)		-	LF	$16.19	$0		
- Well Screen (4" dia)		-	LF	$40.04	$0		
SVE				$0.00	$0		
- Equipment Cost & Installation		-	EA	$1,360,000	$0		
- Equipment Maintenance		-	yr	$80,000	$0		
- Operational Labor		-	DAY	$778.44	$0		
- Power		-	MO	$39,420	$0		
OFF-SITE DISPOSAL							
Off-site Disposal -TSCA						$0	
- TSCA Waste (>50 ppm)		-	ton	$157	$0		
- Requiring Treatment		-	ton	$220	$0		
Off-site Disposal-Non-TSCA						$1,732,500	Debris disposal
- Non-TSCA Waste (<50 ppm)		16,500	ton	$70	$1,155,000		
- Requiring Treatment		-	ton	$155	$0		
Capacitor Disposal Area						$4,410,000	
- Disposal		10,400	ton	$270	$2,808,000		
- Requiring treatment		600	ton	$220	$132,000		

Total Direct Construction Costs (TDCC)	**$15,800,000**	
Area Code 07080 Factor of 1.1	$1,580,000	0.1
TDCC Subtotal	$17,380,000	
Contingency at 20% of TDCC	$3,476,000	0.2
Engineering and Construction Management @ 15% of TDCC	$2,607,000	0.15
Legal and Administrative @ 5% of TDCC	$869,000	0.05
Contingency, Engineering and Construction Management, Legal and Administrative and Location Specific Adders:	$8,500,000	
Total Construction Cost	**$24,332,000**	
Equipment Maintenance	$0	
Maintenance (8% Capital Cost)	$363,741	
20% Contingency	$72,748	
Annual O&M	**$436,489**	30 years
		1.0% discount rate
Present Worth Total Maintenance Cost	**$11,300,000**	
Total Present Worth Project Cost	**$35,600,000**	

APPENDIX B

SUPPORTING CALCULATIONS

Hamilton Industrial Park
Superfund Site
South Plainfield, NJ

Estimated Total LTTD Operational Time	Soil to be treated (yards^3)	Tons per yard^3	Soil to be treated (tons)	Assumed treatment rate (tons per hour)	Total treatment time (hours)	*Pre & Post heating (2 hours per day)	Total heating time (hours)	Total days (@ 10 hours per day)	Total weeks (@ 5 days per week)	Total years (@ 36 weeks per year)
	53,500	1.5	80,250	20	4,013	1,003	5,016	502	100	2.8
			80,250	8.31	9,657	2,414	12,071	1207	241	6.7

*assumes LTTD approach used in FS, and 1.5 hours pre- and 0.5 hours post-treatment heating

Estimated Consumption of Natural Gas	BTU per Hour Input Rate	SCF Natural Gas per Hour (1,020 BTU per SCF)	Total Heating Hours	Total SCF Burned	Total years treatment	SCF per year	House Equivalents Natural Gas Used (1 house = 36,000 SCF per year)
	40,000,000	39,216	5,016	196,691,176	2.8	70,588,235	5,464

*assumes use of 40 million BTU per hour TD (like used at the Industrial Latex Site, at a 20 ton per hour treatment rate)
BTU = British Thermal Unit SCF = Standard Cubic Feet

Estimated Production of Air Pollutants by LTTD	Emission Factor* (pounds per MM SCF)	Total Emissions (Pounds Pollutant)	Rounded Totals (Pounds Pollutant)
CO_2	120,000	23,602,941	23,600,000
N_2O	2.20	433	400
PM (Total, <1.0 micron)	7.60	1,495	1,500
SO_2	0.60	118	100
VOC + TOC + Methane	18.8	3,698	3,700

*from Table 1.4-2 of EPA's 7/1/98 update of "Air Pollutant Emission Factors, Natural Gas Combustion"

Estimates of Truck Traffic Associated with Different Remedial Alternatives	Yards^3	Tons	Truck Loads	Truck Round Trips	
		@ 1.5 tons per yard^3	@ 20 tons per load	Loads x 2	Rounded
Capacitor/waste excavation and off-site disposal	7,500	11,250	563	1,125	1,100
Excavation backfill (assumes 25% extra for compaction)	9,375	14,063	703	1,406	1,400
Stabilization/Solidification Reagents @ 20% cement/GAC additives	10,700	16,050	803	1,605	1,600
Contaminated Soils not Treated with HTTD	53,500	80,250	4,013	8,025	8,000
Backfill (assumes 25% extra for compaction)	66,875	100,313	5,016	10,031	10,000

Estimates of PCB Volumes if Condensation is Used for LTTD Off-Gas Treatment	Tons Soil Treated	Tons PCBs Removed	Pounds PCBs @ 2,000 pounds per ton	Gallons PCBs @ 12.8 pounds per gallon	Tanker Loads @ 4,500 gallons per load
Off-site disposal of condensed PCBs (53,500 yards^3 @ 10,000 ppm average)	80,250	803	1,605,000	125,391	28
Off-site disposal of condensed PCBs (53,500 yards^3 @ 1,000 ppm average)	80,250	80	160,500	12,539	2.8

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September 3, 2004

APPENDIX C

REVIEW OF ASSUMPTIONS FOR CALCULATING PCB SOIL CLEANUP LEVELS

Review of Assumptions for Calculating PCBs Soil Cleanup Level

Cancer Risk Calculations			
	Units	EPA 1990 Guidance	Comment
Cancer slope factor (SF)	(mg/kg/day)[-1]	7.7	The slope factor for PCBs was revised in EPA (1996a) to (2 mg/kg/day
Lifetime Average Daily Dose (LADD) Calculations			
Soil Ingestion	**Units**	**EPA 1990 Guidance**	**Comment**
Soil ingestion rate for child	mg/day	200	These assumptions are consistent with EPA (1991).
Soil ingestion [illegible]	mg/day	100	These assumptions are consistent with EPA (1991).
[illegible] fraction	unitless	0.3	An absorption fraction of 1 would be consistent with EPA (1996a)
Exposure frequency	days/year	365	A frequency of 350 days/yr would be consistent with EPA (1991).
Exposure duration for child	years	6	These assumptions are consistent with EPA (1991).
Exposure duration for adult	years	24	These assumptions are consistent with EPA (1991).
Body weight for child	kg	16	A body weight of 15 kg would be consistent with EPA (1991).
Body weight for adult	kg	70	These assumptions are consistent with EPA (1991).
Averaging time	days	25,550	These assumptions are consistent with EPA (1989).
Soil Dermal Contact	**Units**	**EPA 1990 Guidance**	**Comment**
Initial soil concentration	mg/kg	1	
Average soil concentration for child	mg/kg	0.38	EPA (1990) accounted for depletion of PCBs via volatilization.
Average soil concentration for adult	mg/kg	0.28	EPA (1990) accounted for depletion of PCBs via volatilization.
Soil adherence factor for child	mg soil/cm^2	2.77	An adherence factor of 0.2 mg/cm^2 would be consistent with EPA (200
Soil adherence factor for adult	mg soil/cm^2	2.77	An adherence factor of 0.07 mg/cm^2 would be consistent with EPA (20
Skin surface area for child	cm^2/day	4,000	A surface area of 2,800 cm^2 would be consistent with EPA (2001).
Skin surface area for adult	cm^2/day	3,100	A surface area of 5,700 cm^2 would be consistent with from EPA (2001
Absorption fraction	unitless	0.1	An absorption fraction of 0.14 is recommended in EPA (2001).
Exposure frequency for child	days/year	132	A frequency of 350 days/yr would be consistent with EPA (1991).
Exposure frequency for adult	days/year	52	A frequency of 350 days/yr would be consistent with EPA (1991).
Exposure duration for child	years	15	A duration of 6 years would be consistent with EPA (1991)
Exposure duration for adult	years	12	A duration of 24 years would be consistent with EPA (1991)
Body weight for child	kg	38	A body weight of 15 kg would be consistent with EPA (1991).
Body weight for adult	kg	70	These assumptions are consistent with EPA (1991).
Averaging time	days	25,550	These assumptions are consistent with EPA (1989).
Soil Vapor Inhalation	**Units**	**EPA 1990 Guidance**	**Comment**
Inhalation rate for adult	m^3/day	30	A rate of 20 m3/day would be consistent with EPA (1991).
Absorption fraction	unitless	0.5	An absorption fraction of 1 is consistent with EPA (1996a)
Exposure frequency for adult	days/year	365	A frequency of 350 days/yr would be consistent with EPA (1991)
Exposure duration for adult	years	30	These assumptions are consistent with EPA (1991).
Body weight for adult	kg	70	These assumptions are consistent with EPA (1991).
Averaging time	days	25,550	These assumptions are consistent with EPA (1989).

References:

EPA. 1989. Risk Assessment Guidance for Superfund. Volume I, Human Health Evaluation Manual. Office of Emergency and Remedial Response. EPA/540-1-89-002. OSWER Directive 9285.7-01a. December.

EPA. 1990. Guidance on Remedial Actions for Superfund Sites with PCB Contamination. Office of Emergency and Remedial Response. OSWER Directive 9355.4-01. August.

EPA. 1991. Human health evaluation manual, supplemental guidance. "Standard default exposure factors." Memorandum from T. Fields, Jr., Office of Emergency Remedial Response, to B. Diamond, Office of Waste Programs Enforcement. OSWER Directive 9285.6-03. March 25.

EPA. 1996a. PCBs: Cancer Dose Assessment and Application to Environmental Mixtures. Office of Research and Development. EPA/600/P

EPA. 1996b. Soil Screening Guidance. Technical Background Document, 2nd Ed. Office of Solid Waste and Emergency Response (OSWER). EPA/540/R95/128. May.

EPA. 2001. Risk Assessment Guidance for Superfund. Volume I, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Interim. Review Draft - For Public Comment. Office of Emergency and Remedial Response. EPA/540/R/99/005. OSWER Directive 9285.7-02EP. September.

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